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Abstracts

(An explanation of the classification used in the Digest was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors)

FIBERS A

Natural fibers A 1

Plan first miniature spinning test lab. Anon. *Textile Bull. 4*, 100 (Apr. 1950).

Note: A miniature spinning test laboratory, the nation's first, is the be established this summer at the University of Tennessee, Knoxville. The new facility will be designed to save up to 3 years' time in the evaluation of new cotton strains. A $25,000 initial grant is being made by the U. S. Dept. of Agriculture, division of cotton and other fiber groups, in the bureau of plant industry, to establish the laboratory.

Ramie: an old fiber with new potentialities. G. H. Hoffman. *Textile Mfr. 76*, 172-73, 193 (Apr. 1950).

The botany and cultivation of ramie, its properties and uses, and processing are described. The progress made in recent years in decorticating methods have resulted in increased use of ramie fiber alone and in blends with cotton, wool, etc. The Swiss are reported making a shirting material consisting of 70% ramie and 30% wool, and a dress material consisting of 30% ramie and 70% wool.

TEXTILE TECHNOLOGY HANDBOOK ON JUTE. The Textile Institute, 16, St. Mary's Parsonage, Manchester 3, England, has published "Jute," No. 4 in the Institute's series of handbooks of textile technology. Previous titles are "Mechanics," "Silk," and "The Identification of Textile Materials." The 55 pages of "Jute" are illustrated and include a bibliography. Price: $1.15.—*Chem. Eng. News.*

Artificial fibers A 2

Chemical resistance of nylon yarns. Anon. *Rayon & Syn. Textiles 31*, 91 (May 1950).

This is a reprint of an Official Tech. Service Bull. of the Nylon Division of the DuPont Co. Tests are described which determined the resistance of nylon yarn, nylon bristle and nylon fish line samples subjected to a variety of conditions involving different chemicals in various concentrations.

Comparison of spinning methods for man-made fibers. Anon. *Brit. Rayon & Silk J. 26*, 62 (Mar. 1950).

All man-made fibers are extruded, but solidifying methods vary. The main methods are: 1) wet spinning—extrusion into a coagulating bath as is done for viscose rayon, Aralac, Vicara, Ardil, cuprammonium rayon, and others; 2) dry spinning—extrusion into a current of warm air as for cellulose acetate, Vinyon, Orlon, and others; 3) melt spinning—spinning from a molten material, which when extruded into cool air, solidifies. This is done in the cases of nylon, Saran, Terylene, and glass fibers. Most regenerated type of fibers are precessed by wet spinning; most true synthetics by either dry or melt spinning. Wet spinning is more complex in that recovery plants, washing, and purification processes are necessary. All 3 methods of spinning are discussed as to advantages and disadvantages and as to cross-section of fibers produced.

French synthetic fiber features durability. Anon. *Textile World 100*, 120-21 (Apr. 1950).

Rhovyl, Fibrovyl, Thermovyl, and Isovyl are being produced by the Société Rovyl in France. The fiber is extruded in filament form into a volatile solvent and then into hot air. It can be produced in sizes as fine as 3 denier. It is non-inflammable, completely mildew resistant, resistant to most organic acids, resistant to light, atmospheric and biological decay. Tables of properties common to all these fibers, special to each of them, chemical characteristics, and uses are included Diagrams

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of typical cross-sections are given.

Manufacture of threads, etc., from polyvinyl chloride. Antoine F. G. Mouchiroud & Albert A. E. Lombard (to Sociétee "Rhodiaceta"). Can. P. 459 156, Aug. 23, 1949.

A process for the manufacture of filaments, threads, slivers, fibers, artificial horsehairs, straws, strips, films, foils, tubes and analogous products from polyvinyl chlorides comprising the steps of dry spinning a solution of the polyvinyl chlorides and subsequently subjecting the spinning product to a stretching operation so as to impart to the same an oriented crystalline structure.

Newer synthetic fibers. W. P. ter Horst. *Chem. Industries 66,* 521-26 (Apr. 1950).

This is a review of the many synthetic fibers that have been introduced in the last decade, and a comprehensive summary of their properties and prospects is given. It is predicted that the natural, synthetic and semi-synthetic fibers now available to the textile technologist will satisfy the present and foreseeable needs of the consuming public.

Production of artificial protein filaments. Jas. F. Keggin (to Imperial Chemical Industries Ltd.). USP 2 504 844, Apr. 18, 1950.

The method of producing artificial protein filaments of relatively high tensile strength which comprises wet spinning a matured alkaline solution of a vegetable globulin into an acidic saline coagulating bath, stretching the resulting filaments, rendering the filaments resistant to attack by boiling water and hot dilute acids by immersion in an acidic, saline formaldehyde solution, washing the filaments, drying the filaments, and thereafter, stretching the dried filaments in an atmosphere of relative humidity above 30% by application of gradually increasing tension until the filaments stretch beyond their elastic limit, but less than necessary to break them, and then releasing the tension upon the extended filaments.

Production of organic derivative of cellulose staple fibers by solvent dyeing, mechanical crimping, and cutting in that order. Cyril M. Croft (to Celanese Corp. of Am.). USP 2 504 183, Apr. 18. 1950.

Process for the production of dyed staple fiber materials, which comprises dyeing a tow of continuous cellulose acetate filaments with a dyebath comprising an aqueous solution of a lower aliphatic alcohol containing a dyestuff for the cellulose acetate filaments and a salt of thiocyanic acid which is a swelling agent therefor, washing the dyed filaments directly after dyeing, applying lubricating and anti-static conditioning agents to the dyed, continuous filaments, drying the tow to a moisture content of from about 20 to 30% by weight, imparting a crimp to the dyed and conditioned filaments by mechanically deforming the filaments under pressure, drying the crimped tow to a moisture content of about 6% by weight, and severing the crimped, dyed continuous filaments into staple fiber lengths.

Spinnable peanut globulin solutions. Imperial Chemical Industries Ltd. Australian P. 135 876, Jan. 13, 1950.

Stable aqueous saline solutions are prepared by forming a plastic mass of 60% globulin content by heating an aqueous suspension of about 30% or less concentration by weight of washed undried peanut globulins (that have been precipitated at their isoelectric region from solution) to a temperature of 40° to 60°C for a period of time sufficient to produce the plastic mass, rejecting the exuded water, then incorporating into the mass an alkali metal salt of a strong acid (in such quantity that there is formed, in the water retained in the mass, a salt solution of concentration sufficient to dissolve the globulins and not more than 10% by weight of the water) and thus form an aqueous saline solution in which the globulin content is about 60% by weight. The steps of extruding the solutions, in filamentary form, and coagulating the filaments in an acidified concentrated aqueous saline solution including a soluble organic compound (e.g., ethyl alcohol or acetic acid) are also claimed.

Structure of textile fibers. XII. Alginate fibers. Ernest E. Tallis. *J. Textile Inst. (Proc.) 41,* P52-P55 (Feb. 1950).

In the discussion of alginate rayons, of which calcium alginate is the most important, the author first deals with their molecular structure, showing how alginic acid is built up. Then the fine structure of the alginates is discussed with some attention being given to the x-ray patterns which are obtained with various degrees of orientation and crystallinity.

Structure of textile fibers. XIII. Synthetic polymer rayons. F. Howlett. *J. Textile Inst. (Proc.) 41,* P124-P31 (Mar. 1950).

The molecular and chemical structures of such synthetics as Vinyon, Orlon, nylon, and Terylene are discussed, and the manufacture, properties, and uses of these products are described.

YARN PRODUCTION B

Cotton yarn structure. Part I—Macro yarn structure. J. Gregory. *J. Textile Inst. (Trans.) 41,* T1-T13 (Jan./Feb. 1950).

The macro features of yarn structure as they contribute to the strength of a single yarn held between the jaws of a tensile testing machine are discussed. An analysis is made in terms of the twisted element as the basic unit, but no attempt is made to interpret the strength of the twisted yarn element in terms of properties other than those of twist and weight per unit length. The establishment of a method of approach for measuring the strength of a yarn in a way that is free from the effects of specimen length is also described. A previous "peak strength" concept is replaced by a more fundamental approach in which the need for extrapolating the strength vs. specimen length curve to zero specimen length is obviated, and the interpretation of strength corresponding to zero specimen length is more clearly realized in terms of the bulk, twist, and properties of the fibers at the place of breaking.

Cotton yarn structure. Part II—Preparation and strength testing of artificial yarn elements. J. Gregory. *J. Textile Inst. (Trans.) 41,* T14-T27 (Jan./Feb. 1950).

In this, the second of a series of articles, a tester is described which replaces actual yarn elements by elements produced artificially from roving under controlled conditions so that the strength properites of a wide range of weights and twists can be readily explored. The method for producing artificial yarn elements consists of gripping a length of roving at 2 points outside the length of the longest fibers and separating the jaws to produce a thin place in the middle. Twist is then inserted, and the specimen, being allowed to contract, is moderately loaded. Strength measurements are made by the normal means. In order to relate the measured breaking load to the weight and twist of the thin place in the middle of the yarn, separate calibration tests are made to define these quantities in terms of the weight and twist of the whole specimen between the jaws. Also included is an appendix in which the method of calculation of fiber distribution in stretched roving is shown.

Cotton yarn structure. Part III—Strength of artificial yarn elements in relation to bulk and twist. J. Gregory. *J. Textile Inst. (Trans.) 41,* T30-T52 (Jan./Feb. 1950).

The work described in Part III is concerned with the analysis of data from tests made with an artificial yarn elements tester (see above) on a limited number of cottons, covering the range normally encountered in spinning. As a result of the analysis the following conclusions were arrived at: 1) a plot of breaking length vs. twist for artificial yarn elements defines a characteristic curve from which a maximum breaking length and corresponding twist can be read; 2) maximum breaking length is independent of count for yarn elements prepared from coarse rovings, but shows a slight decrease for finer hank rovings; 3) the relation between count and twist for maximum strength of yarn elements prepared from a given cotton conforms closely with the empirical Spinners rule; 4) a linear relationship holds between twist angle of the surface fibers of the twisted element and the twist factor; 5) combing reduces the twist required to generate maximum strength, and slightly increases the breaking length.

Effect of oil spraying on cotton and spinning process. Anon. *Indian Textile J. 60,* 311-13 (Jan. 1950).

A relatively new product for increasing the spinning efficiency, improving yarn strength and quality, and lowering costs is described. This product (Syton W-20), which is a colloidal dispersion of sub-microscopic non-crystalline silica entities, was used in these experiments employing Indian cotton. As a result of these experiments it was found that a gain in yarn strength, increased production, improved spinning efficiency, less ends-down, and less waste was achieved.

Future yarn developments. W. A. Eley. *Can. Textile J. 67,* 61-2 (Apr. 28, 1950).

This is a discussion of the requirements of an ideal yarn for warp knitting, full fashioned hosiery manufacturing and other purposes.

Fiber preparation B 1

Advances in raw wool blending techniques. Lanarius. *Can. Textile J. 67,* 64, 66 (Apr. 28, 1950).

Stressing the point that good blending is essential in the production of all types of yarns, the author discusses recent advances in blending techniques and several modern systems.

Bleaching of wool. Archie L. Dubeau (to The Mathieson Alkali Works). Can. P. 458 990, Aug. 16, 1949.

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A continuous process for simultaneously scouring and bleaching wool which comprises continuously passing the wool to be treated in contact with an aqueous liquor containing soda ash, sodium bicarbonate, soap and sodium chlorite and maintaining the composition of the liquor such that the weight ratio of apparent carbonate to bicarbonate is within the range of 1:0.5 to 1:2 substantially throughout the operation.

Carbonizing process for loose wool or fabrics. Anon. *Textile Mfr. 76,* 189-90 (Apr. 1950).

See TTD: *7,* 381.

Cleaning textile fibers. M. T. Hoffman. Australian P. 136 617, July 7, 1945.

Uncarbonized foreign matter is removed from wool and other textile fibers by subjecting a thin web of the fibers to pressure sufficient to pulverize the greater part of the foreign matter and then subjecting the fibers to dusting, agitating or other means to rearrange the lie of the fibers with respect to each other. The web is again subjected to pressure adapted to crush or pulverize substantially all the remaining foreign matter. Apparatus described and claimed includes a carding unit, a Peralta crushing machine and a duster, willow, mixing picker, or analogous machine wherein the lie of the fiber is rearranged by beating or toothed lags.

Dust suppression by cotton oiling. Anon. *Fibres 11,* 111-12 (Apr. 1950).

See TTD: *7,* 347.

Electrical control for cotton waste breaking machines. Anon. *Textile Mfr. 76,* 163 (Apr. 1950).

Describes a control for motors that eliminates piling up of material between the cylinders during starting and stopping, or in the event of any one motor tripping out on overload.

How to streamline your fiber blending operations. *Rayon & Syn. Textiles 31,* 59-60 61 (May 1950).

The 2 basic principles which must be observed in blending various elements to obtain a uniform, homogeneous mix are: 1) the various elements must be accurately proportioned either by weight or volume in their desired percentages, and 2) these proportions must then be thoroughly mixed together to obtain the proper blend of the various percentages. This article discusses specifically the blending of various synthetic and natural fibers to produce cloth of different textures. Illustrated with diagrammatic sketches.

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Opening and cleaning machine for fibrous materials. Sydney M. Freeman & Arthur Linnert (to The Brit. Cotton Industry Research Assn.). Can. P. 458 945, Aug. 16, 1949.

An opening and cleaning machine of the kind comprising a rotary beater, means for feeding the material to be opened to the beater and means for collecting the opened material, consisting of a suction cage and a passage the upper boundary of which is formed by a cover leading from the periphery of the beater to the cage, characterized in that the passage includes a substantial space volume directly above the beater, which volume is bounded on its lower side by the periphery of the beater itself.

Scouring of wool with synthetic detergents. J. A. Hepworth. *J. Soc. Dyers Colourists 66,* 101-08 (Feb. 1950).

The scouring of wool on a practical basis is discussed. Some of the problems which are encountered, such as raw wool variation, scouring plant variation, effect of electrolytes, and the soda ash effect are described in detail. The effects of temperature and concentration in the scouring of various types of wool are also discussed.

Stretch-breaking artificial filaments. E. I. duPont de Nemours & Co. Brit. P. 586 017.

A tow of continuous cold-drawable and/or cold-drawn artificial filaments, e.g., nylon filaments, is converted into a spinnable top without destroying the continuity of the tow or the substantial parallelism of the fibers by subjecting the plurality of filaments to stretching and breaking between pairs of rolls, the stretch being simultaneously applied in varying amounts to the individual filaments. Varying degrees of stretch are given to adjacent filaments, prior to breakage, by positioning one pair of rolls at an angle to the other pair, or by employing as the second pair rolls having frusto-conical surfaces.

Textile fiber opening apparatus. John H. Senior & Harmon B. Riehl (to Proctor & Schwartz, Inc). USP 2 505 690, Apr. 25, 1950.

In textile fiber opening apparatus, a fiber conveying cylinder arranged to be rotationally driven in a preselected direction at a relatively slow peripheral speed and having spikes projecting angularly from its peripheral surface in the general direction of rotation thereof, and operable to convey a relatively deep layer of textile fibers thereon, a worker roll adjacent the conveyor cylinder arranged to be rotationally driven in the opposite direction thereto at a peripheral speed

substantially less than the speed of the cylinder and having pins trailing angularly from its peripheral surface arranged to lap the spikes of the cylinder and cooperate therewith to effect an opening of the textile fibers on the cylinder, and a stripper roll adjacent the cylinder and worker roll arranged to be rotationally driven in the opposite direction to the cylinder at a peripheral speed slightly faster than the worker and having pins projecting angularly from its peripheral surface in the general direction of rotation of the stripper arranged to lap the pins of the worker roll and the spikes of the main cylinder to thereby strip the fibers from the worker and deposit the same again upon the cylinder.

Treating wool with cleansing solvent. F. B. Dehn. Brit. P. 586 601.

Apparatus for the continuous treatment of raw wool with a cleansing solvent and for subsequent drying comprises a support having a pervious bottom along which the wool fibers are progressed, and a surrounding chamber partitioned into a portion in which solvent is passed through the wool and the pervious support and a portion comprising heating means for drying the wool. The fibers are compressed at the inlet to the chamber to form a seal against the escape of fumes and are passed along the support in a continuous mat by means synchronized with the compressing means. Raw wool is fed from a hopper by a reciprocating plunger to pass as a fume-sealing plug through a narrow neck into a trough which passes through a chamber. The wool is passed along the perforated base of the trough by a series of rake tines reciprocated in synchronism with the plunger, and is drenched with solvent from nozzles arranged in pairs and having inverted V-shaped baffles beneath them. The solvent passes through the wool and the perforated support into ducts leading into collecting tanks. Pumps supply the nozzles from the upper parts of the tanks while the dirt and grease-filled solvent is passed by screw conveyors from tank to tank and eventually into a receiver from whence it is passed to a recovery system. The trough continues into a further portion of the chamber where the wool is subjected to a stream of heated air which extracts the residual solvent and carries it to a condensing chamber. The wool leaves the chamber in the form of a plug sealing the escape of fumes.

Wool scouring. Archie L. Dubeau (to The Mathieson Alkali Works). Can. P. 459-509, Sept. 6, 1949.

The process of scouring wool which comprises continuously passing wool to be scoured in contact with a bath of aqueous scouring solution comprising soda ash, sodium bicarbonate and soap and maintaining the apparent carbonate: bicarbonate ratio of the bath within the range of 1:0.5 to 1:2 by adding to the solution of the bath predetermined amounts of the hydroxide of a metal of the group consisting of the alkali metals and the alkaline earth metals in aqueous solution.

Carding and combing B 2

Carding machine. Chas. E. White (to Abington Textile Machinery Works). USP 2 506 005, May 2, 1950.

Card stripping mechanism, for removing the mat of material accumulated upon the surface of a continuously rotating cylinder, a carriage having stripping means and traversing means for moving the carriage longitudinally of the cylinder in proximity to the carding surface thereof at a uniform normal rate progressively to remove adjoining furrows of material from the mat throughout the greater portion of the length of the cylinder and having means for decreasing the rate of traverse of the stripping means at the initial portion of the traverse thereby to insure complete stripping of the mat from that end of the cylinder.

Sliver-drawing trains. Societe Alsacienne de Constructions Mecaniques S. A. Australian P. 136 465, Sept. 13, 1946.

A drawing appliance for long staple fibers comprises sliver feeding and guiding means, a drawing roller set and means imparting an undulated path to a sliver and means to apply pressure to the sliver in order to balance the friction upon the outer and the inner layers.

Wool carding analysed. P. P. Towend. *Textile Recorder 67*, 72-4 (Apr. 1950).

This is an account of a series of experiments carried out to demonstrate how certain factors affect the load carried by the worker. The factors which govern the collection of material by the workers over a swift are: 1) the position which the worker occupies over the swift; 2) its setting to the swift; 3) the ratio of its surface speed to that of the swift; 4) the production of the machine; 5) the sharpness of the card clothing; and 6) the count, crown and gage of wire employed.

Drafting and roving B 3

Apparatus and method for the treatment of tex-

tile fibers in strand form. Robt. C. Wilkie (to Pacific Mills). Can. P. 458 229, July 19, 1949.

The method of feeding and drafting a sliver which comprises simultaneously gripping the sliver firmly, feeding it and compressing it to an initial predetermined rectangular cross-sectional area, then feeding and compacting the sliver in at least 2 intermediate stages, in the first of which intermediate stages the sliver is simultaneously fed and compressed to a predtermined rectangular cross-sectional area greater than the initial cross-sectional area and in the last of which stages it is fed and compressed to a predetermined rectangular cross-sectional area which is less than the preceding cross-sectional area and then simultaneously drafting, feeding and compressing the sliver to a rectangular cross-sectional area which is less than the preceding cross-sectional area.

Bottom roll clearer for textile machines. Wm. F. Lee (to Wm. Otto Junker). Can. P. 459 031, Aug. 16, 1949.

In a bottom roll clearer for drawing frames the combination of a clearer comprising an elongated bar beneath and running the length of at least one and preferably more of the lower rolls, the clearer bar having its under surface transversely convexed, the upper surface of the bar having spaced lineally extending grooves co-extensive with the bar, the grooves having fabric linings in contact with superjacent rolls for removing lint therefrom, a lineal series of spaced upstanding rods carried by the roll stand support, the intermediate portion of the clearer bar having a lineal series of spaced transverse bearing holes, each of the holes slidably receiving the upper end of one of the rods, a coil spring carried by each of the rods, the lower ends of the coil springs operatively supported by the roll stand support and the upper ends yieldably engaging the clearer, and means for adjusting the rods in the direction of their lengths whereby to clear the upper ends from the rod receiving holes of the clearer.

Cushioned gears reduce noise on cotton speed frames. Anon. *Textile Mfr. 76,* 164 (Apr. 1950).

Incorporated between 2 precision made components is a rubber cushion which effectively absorbs vibration when the gear teeth mesh, and at the same time reduces noise when running continuously.

Economies in worsted drawing. R. S. Audley. *Fibres 11,* 109-10 (Apr. 1950).

The difficulties encountered in reducing the number of drawing operations are cited. Since sliver under these conditions is fed thicker, the result is that more waste and lower quality products are obtained. These factors are not always compensated for by the increased production. Also described is the "American" system of drawing and its limitations.

High draft conversion of intermediate and roving frames. Anon. *Indian Textile J. 60,* 836-37 358 (Jan. 1950).

Three machines suitable for high draft conversion of roving and intermediate frames are described. One is a super-drafting system for adaptation to roving frames; the second is an inter-drafting system for adaptation to intermediate frames; and the third a double apron system for ring frames. The first is a 2-zone double apron system and the second a 2-zone fluted roller system, having drafting ranges of 16-40 and 10-18 respectively.

Means for treating woolen slivers and the like. Alfred T. Hammerle. USP 2 505 618, Apr. 25, 1950.

In a means for treating woolen sliver and the like, the combination of a pressure chamber having an inlet and an outlet, positively locked closure means for the outlet, means for forcibly feeding woolen sliver into the chamber through the inlet and tightly compressing and packing the same therein, and means for unlocking the closure means upon the attainment of a predetermined pressure in the chamber to discharge the compressed sliver.

New Warner and Swasey pin drafters. Anon. *Indian Textile J. 60,* 338-39 (Jan. 1950).

A new pin drafter is claimed to save up to 35% in yarn processing costs prior to spinning. This machine represents an advanced design of a screw gill and an open-type drawing machine. The machine will handle wool, blends of wool, cotton, and synthetic cut staple with a savings of several processing operations.

Pressure rollers mounting. Patent Textile Rollers (1923) Ltd. Australian P. 135 946, Aug. 28, 1947).

In a high speed gill spinning or twisting frame including a number of pressure and delivery rollers, the nips between the rollers are loaded to a suitable degree by spring members attached to a lever sustaining the bearings of the pressure rollers.

Ambler high draft patent. Aldred F. Barker. *Textile J. Australia 24,* 972-82, 1058-60 (Jan. 1950).

The author cites his experiences in the drafting field and shows how the technology of wool drafting has improved through the years. The development of high draft machinery by Ambler, starting with the idea and ending with the practical machinery, is described in detail.

Centrifugal spinning. P. F. Martinez. Australian P. 135 992, Sept. 1, 1947.

Yarn is wound on the inside of a rotary vessel from a vertically movable yarn holder, means being provided for stopping the vertical movement of the yarn holder, and for stopping the drawing device; a mechanism withdraws the yarn holder from the vessel and introduces the reel into the vessel to rewind the spun yarn from the vessel onto the reel.

Centrifugal spinning machine. Prince-Smith & Stells Ltd. Australian P. 135 875, Dec. 13, 1946.

An electrically driven machine wherein a yarn is laid centrifugally upon the inner surface of revolving holders from which it is subsequently caused automatically to be wrapped onto bobbins inserted into the holder from below, includes means to control, electromagnetically, a yarn delivery means to the yarn holder and a front carriage spindle supporting the bobbins. In case of breakage of the electric power the front carriage instantly rises and inserts bobbins into the yarn holders to receive a yarn spun therein, the delivery of the yarn to the holder is arrested after the carriage has attained its top position.

Contraction requires draft correction. J. F. Bogdan. *Textile World 100,* 107, 228 (Apr. 1950).

Yarn as delivered by the front rolls is lighter than that finally wound on the bobbins. Contraction and increases in weight per unit length take place due to the insertion of twist. A chart to be used in figuring yarn number delivered by the front rolls when final yarn number and twist multiplier are known is given. A sample problem shows how to use the chart. The formulas back of the chart are also included.

High drafting and the Ambler Super-Draft system. G. H. Ambler & Margaret Hannah. *J. Textile Inst. (Proc.) 41,* P115-P23 (Mar. 1950).

This paper gives a description of the Ambler Super-Draft System and of the theory of high drafting on which it was devised, and which was confirmed by actual experiments. Only a general account is presented here since the theory has been previously presented in a more complete form elsewhere (*J. Textile Inst. (Trans.) 41,* T57-T123 (Mar. 1950)). See below.

Lubrication and power characteristics of the textile spindle. Robt. L. Newell. (Thesis submitted in partial fulfillment of the degree of Master of Science in Mechanical Engineering, Ga. Inst. of Technology, 1948-49).

In the production of textiles, power is one of the most important items bearing on the manufacturing cost. Spinning rooms usually consume about 60% of the total power, and spindles use the greatest portion of this. Although lubrication of spindles to prevent wear has been successful for many years, greater reduction in power consumed should be possible with improved lubrication. The purpose of the investigation presented in this thesis was to determine the possibility of gaining worthwhile power savings by using oils of lower than usual viscosities on the average spindle and to present data on the general power characteristics and other variables of the textile spindle. It was found that the power required for driving a spindle increases with its speed and with size or volume of the package employed and decreases with decrease in viscosity of the spindle oil used. Power reductions by use of lower viscosity oils were found to be worthwhile and to represent one of the simplest methods of reducing power costs. A dynamometer capable of making checks on the small amounts of power required by a single spindle was designed and its application in any textile research department described. (Abstract from: *Research Engr.,* Mar. 1950.)

McGlynn Hays worsted spinning machines. Anon. *Can. Textile 67,* 55-8 (Apr. 28, 1950).

In this article, prepared by the McGlynn Hays' technical staff. are descriptions of the French, Bradford and Modified Systems, with a brief description of the company's new twister.

New pot-spinning system increases production. E. H. Helliwell. *Textile World 100,* 124-25, 218 (Apr. 1950).

Abbot Worsted has found that pot spinning eliminates the need for rings, travelers, caps, tapes, cylinders and all the problems that go with them. Spindle speeds up to 11,000 rpm for 19s worsted yarn with 7 tpi have been obtained. Front rolls run up to 120 rpm. Piecing up of broken ends

is easy, the end being inserted into a guide tube. The actual knot or joining is done at the next operation. Pot twisting is also being done at this plant. Any drafting rolls suitable for ring spinning can be used with pot spinning. Yarn is held against the insides of the pot by centrifugal force; but a sheet of aluminum slides into place to hold the yarn when the pot slows down. This serves as a support for the yarn for subsequent operations. Illustrated with pictures of machine, yarn packages, and a diagram of the spindle.

One-way brake for textile machinery. Jos. Noguera (to Casablancas High Draft Co., Ltd.). USP 2 504 571, Apr. 18, 1950.

In drafting mechanism, a shaft, a toothed roller wheel fast on the shaft, the toothed roller wheel being recessed laterally, an annular flange within the recess concentric with the roller wheel and rotatable with the roller wheel, the depth of the flange being less than that of the recess, support means mounted on a fixed part of the drafting mechanism and lying within the recess, segmental means carried by the support means and so positioned with respect to the annular flange as to afford channels which are divergent in the normal direction of rotation of the roller wheel, and spherical members which ride under gravity in the channels and react in opposite directions therein to perform a wedging action on the annular flange if the roller wheel tends to reverse its direction of rotation.

Process and means for the draft of the yarn obtained through the spinning card and device embodying them. Gianni Bettoni & Michele Bettoni. Can. P. 458 687, Aug. 2, 1949.

In the process of spinning yarns from textile fibers, the steps of drawing a roving and vibrating it in a direction substantially transverse to the direction of movement of the roving while being drawn.

Spindle whorl retainer. Floyd H. Sweet (to The Marquette Metal Products Co.). USP 2 500 717, Mar. 14, 1950.

A retainer for a textile mill spindle whorl having a band-contacting portion and a flange therebelow, the retainer comprising a sleeve adapted to be secured in fixed position on a spindle bolster case, with the bore of the sleeve in alignment with the band-contacting portion above the flange and a self-contained complementary unit comprising a spring biased latch plunger, a tubular housing therefor and a plunger releasing element outside the housing and permanently connected to the plunger, the housing of the unit telescoping the sleeve in fixed position thereon, and the plunger extending through the bore of the sleeve as a sliding support for the plunger whereby to position a projecting latching end of the plunger releasably into overhanging relation to the whorl flange.

Spool release for spinning frames. Raymond N. Moody. USP 2 505 567, Apr. 25, 1950.

A spool stand for roving spools comprising vertically extending supports having inclined offset portions and slots at the ends of the inclined portions for receiving the spools, and releasable means engageable with the upper ends of the inclined edge portions of the supports for retaining the roving spool in an elevated position thereon and which upon release will automatically free the roving spool to permit it to pass to the slots, and the releasable means comprising rods, the supports having openings receiving the rods and through which the rods may be extended or retracted, bearing brackets adapted to be secured to a base, a shaft journalled on the brackets, an operating handle connected to the shaft to rotate the same, arms extending laterally from the shaft and connected to the lower ends of the rods whereby as the operating arm is depressed, the release rods will be retracted to free the roving drum.

Theory of high drafting. Margaret Hannah. *J. Textile Inst. (Trans.) 41,* T57-T123 (Mar. 1950).

A general mathematical theory of the roller drafting process for textile fibers with special reference to worsted spinning is derived, and its application to 3 types of processes, conventional, Casablancas, and Ambler Super-Draft, is shown. The forces acting are analyzed, and it is shown that a criterion for satisfactory drafting may be based on certain limiting values of these forces. The conclusions based on this criterion for each type of process, and also as applied to a comparison between different types, are compared with practical drawing and spinning data and are found to be consistent. It is also shown that the conventional drafting system is incapable of satisfying the conditions for any but low drafts. The Casablancas system can deal with higher drafts, and the Ambler Super-Draft can perform much higher ones. Optimum conditions and settings are worked out for the Ambler process and compared with the results of spinning experiments.

Yarn-catching device for spinning frames. Arthur A. Worth (to Whitin Machine Works). Can. P. 457 983, July 5, 1949.

In a wool spinning frame having a fixed ring rail and vertically movable spindles and having yarn guides which have a vertically fixed operative position, in combination, a yarn-catching device comprising a longitudinal support and a series of yarn-catching members spaced along the support and secured therto, each member being positioned directly rearward of its associated spindle and adjacent the normal maximum balloon area of an associated yarn and substantially in the horizontal plane vertically midway between the fixed ring rail and the vertically fixed yarn guides, and each yarn-catching device having a laterally projecting portion effective to engage and break an over-size yarn on excessive ballooning thereof.

Winding and spooling B 5

Air conditioning in modern nylon throwing. H. L. Kempaner. *Rayon & Syn. Textiles 31,* 73-6 (May 1950).

The importance of proper conditions of temperature and humidity in the throwing of nylon is emphasized.

Balling of yarn and the like. Frank Osborne (to Wm. Ayrton & Co., Ltd.). Can. P. 459 249, Aug. 30, 1949.

A machine for balling yarns and the like comprising at least one winding head, a flyer adapted to lay the yarn upon the winding head, and means for driving the winding head and flyer, the driving means being arranged to permit the relative speeds of the winding head and flyer to be altered, for the purpose of changing the type of wind, without stopping the machine.

Conveyor system for spoolers. W. S. Whiting, Jr. *Textile Bull. 4,* 103-04 (Apr. 1950).

This is a description of a conveyor for distributing yarn from one point around a Barber-Colman spooler. The device is a steel conveying chain, the cross-section of which is the same as the conventional spooler bin, and which is so constructed that it can go around corners without chafing or spilling any of its contents. Means are provided for dumping truck-loads of yarn directly into the conveyor and for removing the empty quills from underneath. The conveyor travels on ball bearings and is powered by a half-horse-power motor. In one installation cited, a five spooler operation, one man per shift can handle the yarn, whereas 2 were necessary before. It is figured that conveyor installations will pay for themselves in one year.

Effect of denier, elongation and strength on the behavior of twisted singles yarn. E. J. Sparke. *J. Textile Inst. (Proc.) 41,* P69-P78 (Mar. 1950).

The relationship between the degree of contraction or tension built up in the filaments of a twisted yarn, and the physical properties of the yarn are discussed. Only continuous filament viscose yarns are dealt with specifically, but if density is taken into consideration the results are applicable to other continuous filament yarns. Two fundamental assumptions are made to explain the behavior of the twisted yarn: 1) that the individual filaments follow helical paths; 2) that the individual filaments are under tension as a result of the twisting process and that rupture occurs when this tension rises to the breaking tension of the yarn.

How to get the most out of skein reeling. Robt. W. Harbeck. *Textile World 100,* 130-31, 216, 218 (Apr. 1950).

For an operator tending a number of machines, the doffing time of all the machines minus one should equal the winding time. This allows the operator to go from one machine to the next with no machine waiting time or operator waiting time. Doffing times are listed for various conditions. A series of five charts has been worked out to give production per unit of time, winding time per skein, number of reelers to assign one operator, speed of reel, and several other factors. The formulas for most of these factors are given and explained. The 5 charts are available free from *Textile World.*

Machine for doubling or twisting yarns, threads and the like. Melon Langstreth (to Dunlop Tire & Rubber Goods Co., Ltd.). Can. P. 458 960, Aug. 16, 1949.

A twisting machine comprising a horizontal rotatable spindle, a rotating yarn guide mounted on and rotating with the spindle and extending outwardly therefrom, the spindle projecting beyond the yarn guide and having a longitudinal passage and side opening to the yarn guide, a stationary sleeve mounted and supported on the projecting part of the spindle to permit free relative rotation between the spindle and the sleeve, a package carrier hinged below the axis of the sleeve and depending from the sleeve, a second yarn guide beyond the package carrier and extending outwardly from the axis of the spindle and a support for the second guide mounted on the sleeve above the hinge connection of the package carrier.

Machine for transfer of wound bobbins to bobbin holders from winding machines. Burt A. Peterson (to Barber-Colman Co.). USP 2 505 427, Apr. 25, 1950.

A bobbin winding machine having, in combination, a slideway for supporting and guiding a plurality of bobbin holders each comprising an elongated base member having a plurality of spaced bobbin supporting elements thereon, means for delivering wound bobbins to the elements when the latter reach a predetermined loading position along the slideway, a magazine at one end of the slideway for receiving and positioning a plurality of holders one behind the other parallel to the slideway, and locating means for positioning the leading holder on the slideway.

Mechanism for twisting together 2 strands. Robt. J. Clarkson (to U. S. Rubber Co.). USP 2 503 242, Apr. 11, 1950.

Mechanism for twisting together 2 strands so as to form a 2-ply strand, comprising a support carrying a first let-off strand package and a support carrying a second let-off strand package, a revolving shaft operable to rotate a balloon of the strand from the first package about the second package and also to ply the 2 strands together, and means for positively feeding forward equal lengths of the 2 strands to the junction where they are plied together.

Modern developments in throwing machinery. E. Douglas Boult. *J. Textile Inst. (Proc.) 41,* P79-P87 (Mar. 1950).

The development of the various types of equipment used in the throwing of natural silk is described and discussed. The various machines discussed include: 1) winders (can and pirn), 2) doublers, 3) spinning or uptwisting machinery, 4) sizing equipment.

Speeding up synthetic yarn reeling. Robt. M. Harbeck. *Rayon & Syn. Textiles 31,* 61-2 (May 1950).

A six-skein, double end reeler, intended primarily for use with hand knitting yarns, is described. One operator can attend 2, 3, 4 or more of these machines; while the operator is tying and doffing the skeins on one machine, the others are winding. An improvement of 30% or more in efficiency and a reduction in floor space of as much as 50% are claimed.

Spool stripper. Harold A. Giffin & Henry York. Can. P. 458,267, July 26, 1949.

A waste stripper for carding or like spools which includes a pair of horizontally disposed spaced parallel rolls between which a spool is adapted to be directed, at least one of the rolls being a stripper roll, vertical guides for directing a spool between the rolls and releasable means mounted adjacent the guides independently of the rolls to arrest between the rolls in waste stripping position the spool as it descends in the guides.

Winding machine. Walter V. Johnson (to Universal Winding Co.). Can. P. 450 476, Aug. 10, 1948.

In a winding machine, means for supporting textile cores arranged in a circle, means for rotating the cores, a rotary cam having a helical face, means for rotating the cam, means for feeding a plurality of yarns across the helical face of the cam to cause it to traverse the yarns lengthwise of the cores to wind cops or bobbins thereon, means for travelling the cores circumferentially of the cam, and means operative during the travel of the cores for effecting relative axial displacement between the cores and cam to progressively advance the zone of traverse longitudinally of the cores.

Winding machine. Chas. D. Jencks & Robt. H. Lawson (to Walter Kidde & Co., Inc., to The Werdna Co.). Can. P. 457 969, July 5, 1949.

In a winding machine having a rotatable package support and a thread guide mounted for relative longitudinal and transverse movements; a back carrying the guide and being mounted to move freely by gravity away from the package, a package feeler mounted adjacent to the surface of the package being wound on the support, means for locking the back against movement, and means operated by the feeler for intermittently releasing the locking means.

Winding machine. Robt. H. Lawson (to Walter Kidde & Co., Inc., to The Werdna Co.). Can. P. 457 968, July 5, 1949.

A winding machine having, in combination, rotary spindle for a thread package, a back carrying a longitudinally movable thread guide and being itself mounted for movement toward and from the spindle, mechanism for positively retracting the back at a rate governed by the rotation of a thread package with the spindle, and means for positively pulling thread from a source of supply and supplying it to the thread guide at a uniform tension.

Worsted yarn cheese and cone winding. R. S.

Audley. *Fibres 11,* 93-6 (Mar. 1950).

The equipment and methods for winding worsted yarns are described. Included in this paper is a discussion of automatic, and non-automatic winding machines, and the necessary techniques for achieving maximum production.

Yarn doubling or twisting machine. Dunlop Rubber Australia Ltd. Australian P. 136 133, May 19, 1947.

A disc machine having a support for a package hanging freely from a sleeve, a rotatable disc over which a yarn passes and a yarn guide disposed between the disc and the take-up point is characterized in that the guide is supported by the sleeve independently of the package support.

Yarn guard for double twist spindle assembly. John K. Cochran (to The Duplan Corp.). USP 2 503 936, Apr. 11, 1950.

In a double twist spindle assembly for textile yarns having stationary and rotatable parts, and an air gap between the parts, a yarn guard comprising a centrally apertured circular disc having a flanged outer edge, the disc covering the air gap.

Yarn processing B 6

Device for controlling the tension of thread. Christian Christiansen & Gustav O. K. Rusch. Can. P. 459 367, Sept. 6, 1949.

In textile machines, a device for controlling the tension of a running thread, comprising 2 drums mounted on parallel pivots and interconnected so as to secure constant ratio between the numbers of revolutions of the drums, the thread being passed over the drums in such a way that the drums are set in rotation by the pull of the thread, the thread thereby sliding around one of the drums in a direction opposite to the direction of rotation of this drum.

44 tips on processing nylon staple. Anon. *Textile World 100,* 137, 221, 222 (Apr. 1950).

(Extracted from Nylon Technical Service Bulletin "Spinning Nylon Yarn on the Cotton and American Worsted System," published by the Nylon Div., E. I. duPont de Nemours & Co., Inc.). These 44 tips cover practically all operations in the production of staple yarn. Samples of the tips follow: a) The spinning limit of 6 denier is about 15/1 cotton count or larger, and of 3 denier is about 30/1 cotton count or larger; b) Kirschner beaters are desirable throughout picking and are practically mandatory on the finisher beater; c) wherever feasible, it is advisable to handle and ship yarn in skein form; d) avoid any uncontrolled drafting of the sliver; and e) rayon roll settings are satisfactory. Even closer settings are preferred where possible.

Method and apparatus for tensioning textile strands. Thos. J. Rhodes (to United States Rubber Co.). USP 2 504 047, Apr. 11, 1950.

Strand material is subjected to tension while in the wound state by subjecting a wound package to high impact hydraulic pressure in a radical direction outwardly from the center of the package, whereby the diameter of the package is increased, with consequent stretching and tensioning of the strand material.

Method of treating shaped structures and the structure resulting therefrom. Shirleigh Silverman (to Can. Industries Ltd.). Can. P. 459 953, Sept. 27, 1949.

The method of improving the physical properties of an oriented yarn formed from a polymer containing a major proportion of acrylonitrile which comprises heating the yarn in a relaxed, free-to-shrink condition at a temperature of 80° to 300°C and maintaining the shrunken yarn under a tension insufficient to stretch the shrunken yarn at a temperature of 80° to 300°C for at least 1 hour, both of the heating steps being effected in the presence of an inert heating medium.

Modern processing of nylon yarns. H. Marsden. *Silk & Rayon 4,* 528, 530, 532, 534-37 (Apr. 1950).

See TTD: *7,* 360.

Nylon yarn processing, a survey of American methods. H. Marsden. *Brit. Rayon & Silk J. 26,* 52-6, 94 (Mar. 1950).

See TTD: *7,* 360.

Nylon yarn processing in American mills. H. Marsden. *Textile Mfr. 76,* 153-58 (Apr. 1950).

See TTD: *7,* 360.

Process and device for producing a new fibrous material. Georges Heberlein, Georg Heberlein, Ernst Weiss, Theodor Odinga & Karl Risch (to Heberlein Patent Corp.). Can. P. 459 838, Sept. 20, 1949.

A process for treating cellulosic yarn to produce a wool effect which comprises, impregnating the yarn with formaldehyde capable of reacting bifunctionally with hydroxy groups of cellulose and an acid catalyst, supertwisting the fibrous yarn,

baking the supertwisted impregnated yarn at about 100°C or above, and then detwisting the cellulosic yarn to produce a wool effect which is substantially fast to washing.

Stretching cellulose yarns and cords. Dunlop Rubber Co., Ltd. Dunlop Cotton Mills, Ltd., J. W. Illingworth & L. F. Pickup. Brit. P. 586 105.

Cellulose cords or yarns which have been stretched in steam are subjected to a further steaming operation under a tension sufficiently small to allow them to retract whereby their extensibility is increased. Cotton cords so treated are employed in the fabrication of pneumatic tire casings.

Treatment of yarns or cords comprising cellulose filaments. Jas. W. Illingworth & Leslie F. Pickup (to Dunlop Tire & Rubber Goods Co.). Can. P. 459-470, Sept. 6, 1949.

A process for the treatment of cellulose yarn consisting of cotton filaments which comprises wetting the yarn, stretching the wetted yarn while subjecting same to the action of steam, and submitting the stretched yarn to a further steaming operation under a load such that retraction of the yarn can take place.

Special yarns B 7

Fabric-making material. Milton Harris, Lyman E. Fourt, Byrrell W. Bullock & Godfrey Bloch (to Godfrey Bloch, Inc.). USP 2 504 523, Apr. 18, 1950.

Spun yarn comprising 2 sets of fibers, one set predominantly constituting a core, and the other set being of synthetic fibers of protein and constituting a series of arches exterior to but anchored to the core, the arches being sufficient in number to impart bulkiness and resiliency to the yarn.

Resin bonded yarn. Wingfoot Corp. Australian P. 136 068, Mar. 12, 1947.

Cellulosic yarn of high tensile strength and flex life has its fibers bonded together with an adhesive comprising a mixture of phenol formaldehyde resole and alkali metal rosinate thermoset to a fiber-bonding mass. The bonded yarn, bonded cotton cord, cord-reinforced rubber articles, and methods of production are claimed.

Reinforced asbestos roving, sliver, or yarn. Herbert E. Palm & Clifford M. Gilpin (to Raybestos-Manhattan, Inc.). USP 2 503 237, Apr. 11, 1950.

A reinforced asbestos roving, sliver or yarn which comprises a continuous filament wire strand to impart strength to the yarn, the strand having relatively great strength and a relatively smooth surface, and a staple strand having a relatively rough surface as a core about which asbestos fibers are wrapped as a covering for the core, the staple strand preventing slippage of the asbestos fibers upon the core.

Splitting tricot to make novelty yarns. Anon. *Brit. Rayon & Silk J. 26*, 76 (Mar. 1950).

See TTD: *7*, 274.

Yarn products B 8

Manufacture of pneumatic tire and of tire-fabric. Claude G. Bonard (to Can. Celanese Ltd.). Can. P. 459 446, Sept. 6, 1949.

A tire fabric for pneumatic tires, the fabric having a warp of cords of material selected from the class consisting of regenerated cellulose and cotton, interwoven with relatively weak and widely spaced weft yarns, the weft yarns being composed of a fiber-forming homo-polymer of styrene.

Rope elongation. David Himmelfarb. *Fibres, Fabrics & Cordage 27*, 86-8 (Mar. 1950).

Stretch is not localized, but applies throughout the length of the rope; thus length of specimen does not greatly affect results in percentage. A faster rate of loading tends to show a higher strength value. Rate of load application is not a factor in elongation, however. The data for these facts are shown in tables. The total stretch in a rope seems to diminish with frequency of service. Weathering increases the overall elongation of the rope. Curves and tables are used to illustrate these conclusions.

Rope machine. Wm. E. Somerville. Can. P. 459 615, Sept. 13, 1949.

A rope making machine embodying an elongated body formed of a plurality of tubular sections arranged end to end with a gap engaging only one section thereof, spiders fixed within the body, one on each side of each gap, and a universal joint unit of the swivel type, of small diameter compared with the diameter of the body, disposed within and coaxial with the body between and secured to the central portions of each pair of opposed spiders, and the space around each universal joint unit being clear and unobstructed.

Waterproof cord fuse. Robt D. J. Owens (to Can. Industries Ltd.). Can. P. 459 297, Aug. 30, 1949.

Waterproof cord fuses characterized in that the continuous waterproofing coating comprises a solid polythene having an average molecular weight corresponding to a viscosity of at least 350 poises at 190°C.

FABRIC PRODUCTION C

Electrification of yarns. M. M. Taylor. *J. Textile Inst. (Proc.) 41,* P88-P93 (Mar. 1950).

The effect of static electricity and the problems encountered during a) knitting, b) yarn preparation, and c) weaving are discussed. Five means for reducing or alleviating the undesirable effects of electrification of yarns are given. These include the following: 1) lubrication of the yarn with mineral or vegetable oil, 2) incorporation of suitable conductors in the lubricants, 3) maintaining fairly high relative humidities (65-70%), 4) proper grounding of the equipment, 5) rendering the air conductive by the use of suitable "ionizing" devices which can include high-tension electrical discharges or radio-active materials.

Nylon fabric development. Carl Taber. *Rayon & Syn. Textiles 31,* 87-9 (May 1950).

This is a report of a paper given before a meeting of the Textile Society of Canada. Topics discussed include: first developments in F. F. hosiery; nylon tricot fabrics; sizing of nylon for weaving; nylon staple; outstanding properties of nylon; versatility of nylon; heat setting; 3 ways in which nylon is used in fabrics.

Yarn preparation C 1

Homogenization of warp size. Donald G. Colony. *Can. Textile J. 67,* 59-61 (Apr. 28, 1950).

This is a description of the Gaulin Homogenizer and the advantages offered by homogenization of warp size. In preparing starch with the Gaulin Homogenizer it is not necessary to cook the starch for a long period of time; instead it is only necessary to raise the temperature of the mixture to the swelling point of the starch or 170-200°F depending upon the starches and conditions. As soon as the swelling point is reached the heating is stopped and the mixture is pumped immediately into the Homogenizer where the liquid is subjected to pressure and forced through a minute orifice causing the stream of mixture to attain a tremendous velocity. The shearing action and impact which result from this velocity break up the starch granules. Thus, the starch is converted instantaneously, and its viscosity is broken down to the desired point. The size is then pumped directly from the homogenizer to the storage kettle or to the size box of the slasher, making it unnecessary to hold the starch at high temperatures in cooking kettles for long periods of time.

Impregnating warp yarns; cellulose and cellulose ether solutions. Aqua-Sec Corp. Brit. P. 585 804.

Warp yarns are impregnated under pressure and prior to weaving, with a low-viscosity alkaline dispersion of an alkali-soluble, water-insoluble cellulose ether, the cellulose ether being subsequently coagulated within the yarns while they are separated from one another, after which they are dried. The process facilitates the subsequent weaving operation, permanently lays the nap, and stabilizes the twist of the yarn, and provides the woven fabric with a permanent size which does not have to be removed before dyeing, mercerizing or bleaching. A plurality of single or ply yarns of all types, such as cotton, ramie, jute, flax, rayon, casein fiber, Vinyon fiber, and nylon or mixtures thereof may be treated according to the invention.

Preparation of continuous filament yarn for weaving. T. H. W. Hulme. *J. Textile Inst. (Proc.) 41,* P105-14 (Mar. 1950).

The various stages in the preparation of continuous filament yarns for weaving are described, with the weaver's requirements in mind, and improvements are suggested which would help towards the ideal position where responsibility for faulty fabric would lie solely with the weaver and designer. The various stages discussed include a) winding, b) warping, c) sizing, d) entering, e) transporting, f) tying and entering, and, g) miscellaneous yarn faults.

Sizing of continuous filament rayon yarns. S. D. Weaver. *J. Textile Inst. (Proc.) 41,* P94-104 (Mar. 1950).

The equipment and the methods of sizing viscose and cellulose acetate warps, and fillings for crepes are discussed. The author concludes that the quantities of size now used may be too small, and that the answer will eventually be found in the continuous spinning process by coating each thread with a thick layer of size immediately upon spinning and before it is touched by hand.

Sizing research. Anon. *Textile Weekly 45,* 858, 860, 862 (Apr. 7, 1950).

This is a report of a lecture by D. A. Whitehead

on "Sizing and Weaving Research Under Practical Mill Conditions." The research reported was undertaken to reduce warp breakages during weaving. The methods of conducting tests and evaluating results are described in some detail.

Small-scale slashers for experimental purposes. Anon. *Textile Bull. 76,* 68, 70-1 (Mar. 1950).

Descriptions are given of 2 recently developed experimental slashers, 1) the Callaway slasher and 2) the Monsanto slasher. 1) The Callaway slasher produces a full width warp of any possible number of ends per inch and total number of ends from a minimum quantity of yarn and with a minimum of waste, time and cost. It takes its yarn supply from individual packages such as cones, tubes or cheeses, and delivers a sized warp ready for the loom with as little as 15-20 lbs. of yarn. The slasher functions equally well on cotton, synthetics, worsted, wool and silk yarn and combinations of these. Warp treatments may be evaluated by putting 2 or more treatments on the same warp at the same time and weaving them on the same loom at the same time. For example, on a warp of 3,000 ends, 1,000 ends can be treated with Compound A, another 1,000 with Compound B, and still another 1,000 with Compound C and weaving results tested without the variables involved when different looms are used or when tests are run at different times. The drying chambers contain provision for hot air, cylinder, and infrared drying, which may be utilized separately or in combination. 2) The Monsanto slasher is designed for testing synthetic sizing agents, e.g., Stymer S., Monsanto's chemical aid for sizing acetate warps. The experimental slasher is provided with numerous controls which afford great latitude in control of normal variables. Sized yarns treated with the tested material are examined for tensile strength, elongation and size content, and microscopically in cross-section to assess penetration. Abrasion tests are run on a cohesion tester, single end yarn abrader and the dynamic heddle abrasion tester.

Spanish sizing process. Anon. *Ingenieria Textil 16,* 316-18 (Nov.-Dec. 1949); *in Spanish* (through *Fibres 11,* 141 (Apr. 1950)).

The Spanish company Esquitex claims the use of a new compound as an auxiliary in the sizing process. This product, which is called Visco-Gum A.P., is a mixture of synthetic resins, developer salts and softeners in powder form, as well as the more usual gums. The resins used are derivatives of acrylic acid and methacrylic acid, obtained through catalysis with oxidants which have attained a particular degree of alcoholic polymerization (permitting greater solubility) as well as fixation of the characteristic structure of the vinylic series. The exact structure is not disclosed, but it may be said that as regards solubility and adhesive power, it is comparable with cellulose derivatives such as methylcellulose and sodium glycolate cellulose, while it possesses superior drying speed. The developer salts are organic diastase salts, which act like the maltases in promoting semi-complete hydrolysis of the starches and flours, which become transformed into semi-dextrins during the process of boiling and are converted into complete dextrins on drying. It is claimed that the softeners in powder form which integrate the product also represent a sizing novelty; they are sodium salts of derivatives of sulfonamides of condensed fatty acids. They do not cause separation of fatty bases, for which reason their softening action is complete while, at the same time, avoiding calcareous precipitates.

Studies of single end sizing of cotton yarns. Ralph L. Hill (Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Textile Engineering, Ga. Inst. of Technology, 1947-48).

The goal of every cotton mill that makes cloth is to obtain a perfectly sized cotton yarn. The usual method of sizing cotton yarn is to apply a hot size mixture to the yarn and then dry the yarn on hot cylinders or in hot air. The object of this investigation was to find a suitable method of single end sizing of cotton yarn which will give the optimum conditions of elasticity, smoothness, and tensile strength in the sized yarn. The procedure followed in this study included preliminary test runs to determine the optimum conditions for spinning the best quality of yarn from a standard size and quality of roving in the creel. The most suitable method of applying the size compound to the yarn was then determined, after which the most promising of a number of size compounds was determined. Finally, a group of experiments was made using 5 superior types of size compounds, during which the concentrations were varied to determine the exact procedure for producing optimum conditions in the sized yarn. From the results of these tests, it was concluded that, on an experimental basis, single cotton yarns can be sized at the spinning frame during the twisting operation, thereby producing weaving yarns of good qualities. (Abstract from: *Research Engr.,*

May 1949.)

Warp beam. Wm. H. Levers & Richard H. Baines (to Camille Dreyfus). Can. P. 459 357, Aug. 30, 1949.

A warp beam provided with movable flanges making a sliding fit on the beam and having outwardly facing bosses, at least one of the bosses having its outer edge formed into at least 2 identical cam surfaces, the flanges being held against outward displacement by means of studs adapted to engage the outer edges of the bosses and screwed into identical parallel sets of holes being equally spaced around the beam at each end, one stud and one set of holes being provided for each cam surface, the flange or flanges having a boss engaging the surface of the beam, the throw of the individual cams being such as to enable the distance between the flanges to be varied infinitely within the limits imposed by the distance apart of the outermost stud holes in the beam.

Weaving C 2

Automatic looms for fancy woolen and worsted weaving. D. C. Snowden. *Fibres 11,* 129-34 (Apr. 1950).

A number of automatic looms are described. These looms generally fall into 3 classes, depending on how the supply of filling is maintained: 1) a mechanism ejects the shuttle in which the weft pirn or bobbin is down to a few yards of reserve and places a full shuttle in place; 2) a mechanism ejects the spent bobbin and inserts a full bobbin into the shuttle; 3) a tip-to-tail link-up of cone packages is arranged on a loom which uses rapiers or small carriers to insert the filling from supply packages.

Automatic weaving loom. Vilem Werner & Karel Kubelka (⅓ to Zbrojovka Brno). Can. P. 459 887, Sept. 20, 1949.

In an automatic weaving loom the combination comprising a pair of rotating driving wheels having parallel axles distanced from each other by about the width of the warp, a flexible belt continuously driven by and around the wheels and through the shed in one direction in an endless path, the free ends of the belt being apart for at least the width of the warp, a thread catcher attached to the belt, a stationary weft bobbin arranged outside the path of the belt, a feeder situated on one side of the warp supporting the end of the weft thread and cooperating with the moving catcher, a seizing device freeing the pulled end of the weft thread from the catcher, and a

thread cutting device close behind the feeder.

Battery supporting means for looms. Wm. H. Bahan (to Edw. F. Bahan). USP 2 505 635, Apr. 25, 1950.

In a bobbin changing loom having a frame and a bobbin support and a hopper stand, a supporting device for the bobbin support comprising a bracing member secured at one end to a portion of the loom frame and secured at its other end to a portion of the hopper stand of the loom, the bracing member being provided with a downwardly projecting member having a hole through its lower end adapted to be penetrated by a bolt on which the bobbin support is mounted.

Can the orthodox sley be eliminated? R. Williamson. *Textile Mfr. 76,* 174 (Apr. 1950).

This is a paper commenting on Hart's "Loom Development: a new principle of design" (*Textile Mfr. 76,* 61-2 (Feb. 1950), TTD: *1,* 281) which proposed a loom with a stationary reed with the fell of the warp and a small portion of the woven cloth movable. The present paper cites 3 possible disadvantages to Hart's proposal: 1) extra strain and rubbing imposed by the "see-saw" action; 2) it would be more difficult for the weaver to note faults in the cloth; and 3) the system would be limited to the plain weave and the center-closed shed. The author then suggests a stationary lay with a roller mechanism to achieve the beating-up. Along the surface of the roller, which would be placed beneath the bottom line of shedding and extending the full width of the cloth, would be 2 rows of blades or pins strong enough to beat-up the weft, yet fine enough to enter the warp shed without unduly disturbing the position of the warp ends. The blades would be placed at an angle and extend diagonally across the length of the roller.

CLARK'S WEAVE ROOM CALCULATIONS; A PRACTICAL TREATISE OF COTTON YARN AND CLOTH CALCULATIONS FOR THE WEAVE ROOM, ESPECIALLY APPLICABLE TO THE SOUTHERN MILLS. W. A. Graham Clark. 3rd Ed. Charlotte, N. C., Clark Publishing Co.. c1949. 244 p. Price: $5.00.

This is the third edition of this work, which is intended primarily for use in the mill. The book is divided into 2 parts: Part I—Cloth calculations; Part II—Typical American Cotton Cloths. Part I has been revised to include additional rules and also further pertinent information, particularly as to loom speeds and the number of looms per weaver. For one print cloth of large production

there are given details of manufacture in each of 24 separate mills. In Part II, which gives width, weight, ends and picks, and warp and filling numbers for several thousand cotton cloths, the revision has added more than 700 additional fabrics, many of which became of importance during World War II.

Design and production of satin-backed crepes. A. T. C. Robinson. *Silk & Rayon 4*, 513-14 (Apr. 1950).

The construction and characteristics of the following are described: crepe phantom, satin-backed faille, satin-backed marocain faille, satin-backed rib, and satin-backed warp-way rib.

Electromagnetic shuttle protector system for looms. Arthur R. Abbott (to Sidney Blumenthal & Co., Inc.). Can. P. 459 790, Sept. 20, 1949.

A loom comprising a frame, a shuttle box at each side thereof, picking mechanism for driving a shuttle to and from the boxes, lay mechanism, and electronic means for stopping the loom and arresting the lay mechanism when the lay has partly completed a forward stroke, the electronic means being controlled by cooperative electric and magnetic elements carried by the shuttle boxes and the shuttle operating in connection therewith.

Electromechanical weft detector. Herbert A. Whitin (to Crompton & Knowles Loom Works). USP 2 506 258, May 2, 1950.

An electromechanical weft detecting mechanism for a loom.

Keighley dobby. W. Middlebrook. *Textile Mfr. 76*, 160-62 (Apr. 1950).

Continuing the description of dobby shedding motions, this article discusses the Keighley, "W.B.," "Durable," Dreadnought" and "Climax" dobbies.

Laminated picker stick. Washington I. Bullard & Leonard B. Pitts (to The Bullard Clark Co.). USP 2 503 711, Apr. 11, 1950.

A picker stick for looms including in its structure a multiplicity of laminations of hardwood arranged with the grain of the laminations running longitudinally and substantially parallel, impregnated with 10-27% phenol-formaldehyde resin by weight, bonded together in continuous face-to-face contact, compressed to a density of 1.28 to 1.46 gms/cc., having a maximum cross-section of approximately .90 x 1.80 in., and conforming to the formula M/D=28,500 to 36,500, where D is the density of the impregnated hardwood and is between 1.28 and 1.46 gms/cc. and M is its modulus of rupture in lbs./sq. in.

Letoff for loom. Albert Palmer & Victor F. Sepavich (to Crompton & Knowles Loom Works). Can. P. 458 580, Aug. 2, 1949.

In a letoff mechanism for a loom having a beam which turns to supply warp, the tension of which increases when the beam turns too slowly to supply the warp needed for the weaving operation, and means responsive to increased tension in the warp causing the motor to run faster than the normal speed thereof to enable the beam to supply the warp needed for the weaving operation.

Loom bumper strap. Sherman D. Lesesne (to Graton & Knight Co.). USP 2 499 596, Mar. 7, 1950.

A loom picker bumper strap comprising an elongated, narrow laminated body having outside parallel layers of leather, and an inner, unitary strip of multiple layers of closely spaced rubberized fabric in which the fabric layers are bonded together by rubber as a stiffly resilient spring strip, the leather layers and the inner strip having a series of spaced elongated holes threaded on the picker rod between the picker and the support and forming S-shaped compressible corrugation loops, the leather absorbing and protecting the strip from the picker blows and the strips loops resiliently resisting bending and serving to cushion the picker impact gradually and to urge the strap towards a straight condition and expand the loops after the impact irrespective of the condition of the leather layers.

Loom for weaving. Thos. Hindle. Can. P. 449 083, June 15, 1948.

Hydraulic means are provided for actuating the lay.

Loom shuttle. Emerson B. Tifft (to Draper Corp.). USP 2 501 624.

A loom shuttle comprising a body portion having a stub at an end thereof, a tip and a contractile sleeve compressively embracing the stub, and the internally recessed spur terminating the shank; the spur compressively embracing the sleeve, the sleeve compressively embracing the stub, and the stub compressively embracing the shank.

Means for actuating the dobbies of looms for weaving. Thos. Hindle. Can. P. 449 082, June 15, 1948.

The heald frames are positively controlled by hydraulic action of power pistons.

Means for inserting a weft into a warp in a circular loom. Henry J. Cooper. USP 2 506 442, May 2, 1950.

A circular loom having rollers which revolve about a center line and rotate about their own axes, weft inserting members lying loosely on and supported from below by the rollers against downward displacement and axial tilting movement, and rollers forming part of and carrying the weft inserting members supported by the first named rollers, the axes of all the rollers being all directed to a common point on the center line and the peripheries of all the rollers being parts of cones whose apexes also meet at the common point, and the conicity of the first named rollers resisting the centrifugal effect which acts on the weft inserting members.

Mill solves problem by rebuilding looms. E. H. Helliwell. *Textile World 100*, 122-23 (Apr. 1950).

A mill decided to rebuild its looms instead of buying new looms. Looms were taken out in groups, stripped, cleaned, painted, rebuilt with new Draper parts, put back into operation. While the looms were out, the floor they had been standing on was replaced. The entire cost was two-thirds that of new looms. Shuttle size, beam capacity, and picks per minute were all increased.

Pick shaft assembly. Francis G. Lake & Everett H. Ashton (to The M. W. Kellogg Co.). USP 2 493 631, Jan. 3, 1950.

A new and improved pick shaft assembly which is designed and constructed to eliminate need for accurate alignment of the shaft mounting bracket thereof and adjustable to eliminate end play therein caused by wear resulting from the thrust forces on the shaft incident to picking action.

Picking mechanism of looms for weaving. Thos. Hindle. Can. P. 449 084, June 15, 1948.

This invention provides a hydraulically operated picking mechanism.

Pneumatic thread holder for weft replenishing looms. Richard G. Turner (to Crompton & Knowles Loom Works). USP 2 505 443, Apr. 25, 1950.

In pneumatic thread control means for the weft ends of a weft replenishing loom, a hollow thread accumulator in which subatmospheric pressures exist, a hollow pneumatic thread holder for the weft ends having an opening therein pneumatically connecting the interior of the thread holder and the interior of the accumulator, movable thread engaging means adjacent to the opening, and means capable of holding the thread engaging means either adjacent to the opening in position to engage fine weft ends passing through the opening or spaced from the opening in a position to be incapable of engaging coarse weft ends passing through the opening.

Shuttle. Matthew M. Taylor (to Camille Dreyfus). Can. P. 460 026, Sept. 27, 1949.

A shuttle for use in an automatic loom of the cop-changing type and adapted to carry weft yarn wound on a flanged pirn tube provided with a detachable butt, the shuttle comprising gripping means for receiving and gripping a detachable butt, carrying a flanged pirn tube and forced therewith into the shuttle, guide means presenting sloping surfaces adapted to engage the flange of the pirn tube as it enters the shuttle and to urge the flange into engagement with the face of the butt, and holding means adapted to engage the flange in the shuttle and to hold it firmly in engagement with the face when the butt is gripped by the gripping means.

Shuttle box for looms. Francis J. Sullivan & Arthur R. Abbott (to Sidney Blumental & Co.). Can. P. 459 437, Sept. 6, 1949.

A shuttle box for looms comprising, a bottom and a back uprising therefrom, the back having a substantially straight inner surface, a shuttle arresting shoe and a shuttle aiming piece mounted in substantial alignment on the bobbin and adjacent its edge that is distant from the back, the shoe and aiming piece having at least part of their inner surfaces substantially straight, the part of the inner surface of the shoe normally lying at an angle to the inner surface of the back and the part of the inner surface of the aiming piece normally lying in substantial parallelism with the inner surface of the back and means for angularly adjusting the shoe and aiming piece with respect to the back.

Warp let-off motion. J. Picanol. Australian P. 136 067, Mar. 7, 1947.

A positively driven warp let-off mechanism for power looms comprises a roller oscillating with the shed and a whip roller, the tension of warp on which controls the amount of yarn paid out by a warp beam. The oscillation axis of a support for the roller is located in a position such that the movement about oscillation axis of the pressure of the resultant of forces acting on the roller has, for a predetermined tension in the warp, a con-

stant value which is independent of the diameter of the warp beam. The support is balanced by a spring and is adapted by a lever device to control the amount paid out by the warp beam.

Warp-stop motion. Saml. W. LaRocque. USP 2 485 533, Oct. 18, 1949.

Improvements in electric warp stop motions for use in looms equipped with mechanical side filling stop motions.

What do we mean by good weaving? V. Morland. *Silk & Rayon 4*, 514 (Apr. 1950).

The advantages of the automatic loom in eliminating loom stoppages due to weft replenishment are noted.

Yarn-carrying device. Matthew M. Taylor (to Camille Dreyfus). Can. P. 460 025, Sept. 27, 1949.

A detachable butt for a flanged pirn tube, to adapt such tube for use in an automatic loom, the butt being of generally cylindrical shape and having rigid hook means rigidly secured thereto, the hook means extending beyond one end of the butt and inwardly towards the axis thereof and being adapted to engage over the flange of a flanged pirn tube to secure the pirn tube to the butt.

Knitting C 3

Checklist can improve garment fabric. E. Dalton White. *Textile World 100*, 114-15 (Apr. 1950).

The Gurney Mfg. Co. has a carefully worked out system of maintenance and adjustment for its machines. They produce their own yarn, and a wide range of knitted fabrics. Defects are analyzed, both in fabric and yarn, and correction followed up. All needles are changed every 4 months, yarn tensions are carefully checked. Machines are air cleaned each shift, hand cleaned weekly, cleaned and washed with cleaning fluid semi-annually. All moving parts are kept well oiled.

Circular knitting machine. Edgar W. Clarke (to Mercury Mills, Ltd.). Can. P. 458,613, Aug. 2, 1949.

An article of hosiery comprising leg and instep portions comprising thread knit to form inwardly facing stitches and outwardly facing stitches occurring in predetermined sequences in each of a plurality of selected needle wales, and heel, sole and toe portions comprising a plurality of threads knit to form body stitches and terry loops of greater length than the body stitches.

Circular knitting machine. Edgar W. Clarke (to Mercury Mills, Ltd. Can. P. 458 614, Aug. 2, 1949.

In a knitting machine having coaxial needle cylinders with needles operable in either cylinder, and means for feeding a plurality of threads to the needles, the combination with means for operating the needles to receive and knit thread fed by the feeding means, of pattern controlled mechanism for transferring selected needles from one cylinder to the other during the knitting operation to form inwardly facing stitches and outwardly facing stitches in predetermined sequences in selected needle wales, and instrumentalities cooperating with the needles to draw longer loops of one of the threads than of another to form portions of terry fabric.

Circular knitting machine with wrap thread mechanism. Henry H. Holmes (to Wildt & Co., Ltd.). Can. P. 457 984, July 5, 1949.

In a circular knitting machine in combination, a rotary needle cylinder component, needles for operation in the component, an embroidery head arranged concentrically with respect to the cylinder component, the head comprising means for supporting bobbins, and a circular series of embroidery thread guides adapted to wrap wale threads from the bobbins round desired needles for the purpose of producing design effects by embroidery plating, and a disc with a series of thread-guiding holes corresponding in number and arrangement with the embroidery thread-guides, the disc being rotatably arranged eccentrically in relation to the axis of the cylinder component and adapted to be driven together with the latter and the embroidery head so that it will function by virtue of its eccentric motion to measure off thread from the bobbins for embroidery plating such wise as to enable the corresponding needles to draw upon the threads so measured off in the formation of embroidery stitches.

Cleanliness is important in outerwear production. Lawrence Levy. *Textile World 100*, 116-17 (Apr. 1950).

Factors other than machine adjustments that must not be overlooked if a quality fabric is to be produced are: 1) danger of mixed yarns; that is, yarn of the same count from different lots of yarn that look alike, like viscose and acetate rayon; 2) wrong needles and sinkers, which are sometimes put in by the knitter; 3) the length of stripe should be checked each time the color is changed, as each color has a different effect on the stitch; 4) excessive oil, which streaks the fabric; this can some-

times be blown from the cylinder; 5) cleanliness of machines; especially accumulations of lint.

Enlargement of loops in circular knitting machine. G. Stibbe & Co., Ltd., E. V. Stibbe & E. S. Barsby. Australian P. 136 007, Nov. 5, 1945.

In an independent needle type machine the enlarged loops are produced in desired area by means of an enlarging cam pivotally mounted within a sinker cam cap. The cam is operatively connected through a bell crank, a spindle and an arm with the jack operating cam to cause sinker cams to move earlier in relation to the knitting location than is formerly the case.

Factors affecting the relaxation shrinkage of knit underwear tubing. Louis I. Weiner. *Am. Dyestuff Reptr. 39,* 241-48 (Apr. 17, 1950).

The effect of knitting and finishing variables on the shrinkage of typical Quartermaster Corps cotton underwear constructions was studied. Factors analyzed, such as yarn count, knitting stiffness, and stitch type revealed the importance of tightening the fabric structure as a means of reducing potential laundering shrinkage. From the study of finishing factors it was indicated that wet operations, as currently used, tend to relax the fabric somewhat, thereby reducing shrinkage. However, this reduction in shrinkage is not sufficient to overcome the major shrinkage-inducing strains introduced in knitting. Calendering was shown to have a determining effect on the shrinkage of the finished fabric, and it was found that adjustments of the directional shrinkage of knit underwear may be made at this stage of processing. By the combination of the best knitting and finishing conditions it was found possible to reduce the potential shrinkage of underwear by as much as one-half.

Flat knitting machine. Howard K. West (to Dexdale Hosiery Mills). Can. P. 458 379, July 26, 1949.

In a knitting machine, a presser ledge, a series of hook needles, means for moving the needles up and down and in and out relative to the presser ledge, a series of beard points, and mechanism for actuating the points to interpose them from above between the presser ledge, and the needles and to cause them to cooperate with the needles during the loop forming cycles of the machine, including a holder for the points, and a support pivoted for up and down swinging movement in which the holder is confined to reciprocation for lateral movement with the needles relative to the presser ledge.

Four motions are the key in full-fashioned hose. H. B. LeFeaux. *Textile World 100,* 108-09 (Apr. 1950).

The quality of knitting is dependent on 4 motions: 1) the needle-bar, 2) sinker-and-divider, 3) knock-over, and 4) presser motions. These 4 motions are discussed and the effects of improper settings outlined.

Full-fashioned stocking. Paul Schmidt (to Wytheville Knitting Mills). USP 2 503 221, Apr. 4, 1950.

In a single unit full-fashioned stocking, a narrowed heel part including a portion having single needle fashion marks forming a line diverging from the selvedge in the direction of knitting, the portion followed in the direction of knitting by a portion having a plurality of fashion marks in each of a plurality of courses forming a double row.

Heel fashioning mechanism for straight knitting machines. Eugene M. Zesch (to Karl Lieberknecht, Inc.). Can. P. 459 975, Sept. 27, 1949.

In a straight knitting machine, a bar with a series of spring beard needles, means for imparting up and down movements of the needle bar in stitch formation, a presser ledge, an element independently supported for capacity to rise and fall with the needle bar and adapted to engage the needles from behind to urge them into contact with the presser ledge in stitch formation, and means for actuating the element in timed relation with the movements of the needle bar.

Keep in mind special needs of worsted yarns. Walter A. Simond. *Textile World 100,* 112-13 (Apr. 1950).

Machines of the correct gage for the count of yarn must be used for quality hosiery. For best hand, 2 ply yarn should have as little twist as possible. Nylon can be used for reinforcing the heel and foot. Machines must be kept in good condition; needles in perfect alignment. Tensioning is critical; too much will stretch the yarn, too little will cause uneven stitches. Cones should be held in a fixed position by the cone holder. Yarn should be moistened; an olive oil emulsion will give good results. Oil from the machine, or other contamination should be avoided.

Knitted fabric. Henry H. Holmes (to Wildt & Co., Ltd.). Can. P. 457 985, July 5, 1949.

A knitted fabric with oppositely concatenated knitted loops and with terry loops incorporated suchwise as to produce a pattern effect or design.

Knitted padding. Frank J. Ford (33⅓% each to Max B. Striar & Harry Whitaker). Can. P. 459 884, Sept. 20, 1949.

A knitted padding comprising a succession of rope inlays, and a plurality of knitting threads interlaced with each other to confine the rope inlays and to definitely limit the stretch of the fabric, both longitudinally and transversely of the inlays, certain of the threads extending longitudinally of the inlays and crossing other threads with which they are interlooped, and certain of the latter threads embracing and confining the inlays.

Knitted plush. J. B. Lancashire. *Brit. Rayon & Silk J. 26,* 60-1, 63 (Mar. 1950).

All-over plush, figured plush, and fancy-colored plush can be produced by either weft or warp knitting. Finishing can produce a pile on this plush. Most knitted plush has in the past been made on Terrot or sinker wheel type machines. Now, however, a machine made by the Supreme Knitting Co. is being used. The differences in the product made by these 2 types of machines are discussed, and also shown by diagrams. The sinker type machine produces a fabric of better quality; but the rate of production is not nearly so great as that of the Supreme Machine. Development of designs for both types of machines are given. This includes the functioning of the sinker wheel for the Terrot type machine, and the feeders and horizontal wheels for sinker selection of the Supreme model.

Knitting machine. Oscar Fregeolle (to Hemphill Co.). Can. P. 457 074, May 31, 1949.

In a knitting machine having superposed, axially aligned, rotatable, needle cylinders, a wrap spindle projecting through the upper cylinder, a wrapping head on the spindle positioned at wrapping level with respect to needles knitting in the lower cylinder, means for moving the spindle and the head into wrapping position eccentric of the cylinders and for moving the spindle and the head into an idle position substantially concentric of the cylinders, a heel and toe pocket spreader concentric with and rotatable by the wrap spindle and vertically movable independently thereof and means for causing the spreader to engage the heel or toe pocket of a stocking being knitted when the wrap spindle is in its idle, substantially, concentric position.

Knitting machine. Paul W. Bristow (to Scott & Williams, Inc.). Can. P. 458 461, July 26, 1949.

In a knitting machine of the superposed cylinder type, means for feeding main yarns to the needles, means for feeding a plating yarn to the needles, means for effecting changes of the main yarns fed to the needles, and means for inserting into action, for maintaining in action, and for removing from action the plating yarn independently of changes of the main yarns which are fed to the needles simultaneously with the plating yarn.

Knitting machine. Johannes P. Ludwig to (Phoenix Hosiery Co.). Can. P. 459 986, Sept. 27, 1949.

In a straight stocking knitting machine, a series of spring beard needles, a presser ledge, means for normally actuating the needles, as during the knitting of the leg and instep portions of a stocking blank, so that the beards of all of them will engage the presser ledge, auxiliary means for actuating the needles, as during heel cheek knitting, to prevent contact of the beards of the instep needles with the presser ledge, presser elements associated with the needles of 2 groups reserved for heel cheek knitting respective at opposite ends of the series, means for selecting the presser elements in progressively increasing numbers inwardly from corresponding ends of the 2 groups for a time and later for progressively decreasing them for a time during heel knitting means for actuating the selected presser elements to cause closure of the beards of the corresponding needles during the heel knitting.

Knitting machine attachment. Frank G. Weisbecker. USP 2 501 246, Mar. 21, 1950.

This invention provides an attachment for the needle bar shaft of a straight knitting machine that will eliminate the adverse effects of bearing wear.

Knitting machinery. Jack Fontaine. USP 2 504 316, Apr. 18, 1950.

In knitting machinery, a straight row of vertically reciprocable needles, a guard plate adjacent the needles along which the knitted work proceeds steeply down, a plurality of sinker blades thrusting the knitted work down along the plate, each blade having a notch clearing the plate and a forward projection to come to rest above the plate and another forward projection to come to rest below the upper portion of the plate, and a rock shaft adjacent to the needle mounting for oscillating the blades.

Knitting needle. Marcel Vitoux (to Am. Vitos

Co.). Can. P. 457 470, June 21, 1949.

In a knitting needle having a hook and a thread-operated blade pivoted upon the needle for cooperation with the hook in the formation of a knitted mesh fabric pivotally mounted on the needle, effective thread engaging means on the blade for initiating a pivotal closing movement of the blade towards the hook when engaged by the thread, and means on the needle adjacent to the thread engaging means on the blade for positively guiding the thread to the means on the blade.

Knitting needle. Albert C. Kendig & Lloyd Spencer. Can. P. 457 765, July 5, 1949.

A knitting needle, comprising, a shaft pointed at one end, a head eccentrically disposed on the unpointed end of the shaft and having a passage through its offcenter portion contiguous to one side of the shaft, the axis of the passage converging toward the shaft in the direction of its unpointed end, the passage adapted to receive the pointed end of a mating knitting needle shaft whereby a pair of the needles are joined by their ends, with the shafts tending to bow outwardly from each other by reason of the converging axis of each passage and exert a biasing strain tending to bind the shafts in their respective passages.

Knitting of shaped fabrics. Jos. Held & Herman Scheer (to Textile Machine Works). Can. P. 457 554, June 21, 1949.

A mechanism for controlling the width of fabric made on a straight knitting machine comprising a spindle having oppositely threaded portions with nuts threaded on each portion, a pair of combs operated by the spindle, and connections between the nuts and the combs for moving the combs responsive to movements of the nuts including means for adjusting the distance between the nuts and the combs under loop transferring conditions.

Method and machine for making seamless hosiery. Paul L. Thurston, Harrison Hilker & Harold Welker (to Interwoven Stocking Co.). Can. P. 459 497, Sept. 6, 1949.

A method of knitting an article of hosiery on a knitting machine having a circular series of needles and associated instrumentalities cooperating therewith to form stitches, which comprises knitting a tubular seamless section of fabric to form a leg portion of the article while feeding wrap yarn to selected needles to produce a wrap embroidery pattern in the leg portion, knitting an integral tubular seamless section of fabric to form a sole portion and an instep portion of the article while feeding wrap yarn to selected ones of the needles forming the instep to produce a continuation of the pattern in the instep portion and concurrently feeding terry thread to needles forming the sole and manipulating the needles and associated instrumentalities to draw longer loops of the terry thread only to produce terry fabric in the sole portion.

Method of forming designs in knitted or woven fabric of synthetic polyamide fibers such as nylon. Elmer F. Seemuller. Can. P. 459 220, Aug. 30, 1949.

The method of forming a design in nylon fabric, which comprises prior to preboarding enlarging the normal distance between the threads at selected points of the fabric by exerting sufficient pressure against selected portions of the threads at the points to stretch the portions with elements penetrating the fabric, and subjecting the fabric to heat while the portions are in a stretched condition to set the stretched portions of the threads in their stretched condition.

Method of knitting. Eugene St. Pierre (to Hemphill Co.). Can. P. 458 406, July 26, 1949.

A method of making knitted fabric with a circular knitting machine which includes the steps of knitting courses simultaneously each of an individual yarn and transferring intermediate loops of a previously knit course while the knitting of all of the yarns is in progress.

Nylon staple in hosiery. D. H. Heckert. *Am. Dyestuff Reptr. 39,* P301-03 (May 1, 1950).

The manufacture of nylon staple and its uses are briefly presented in a non-technical manner. Wear resistance, pilling, boarding and counter appearance are discussed with special reference to hosiery. The use of shorter crimp-set staple yarns of higher twist to attain better loft, better coverage, and less pilling is explained. The boarding of articles from crimp-set staple under high and low steam pressures is considered.

Pay attention to needles on 400 needle machines. Chas. Arrowood. *Textile World 100,* 113-14 (Apr. 1950).

Good needles mean the correct needles for the job, proper alignment, and regular lubrication. Needle breakage is often a sign of trouble, and the cause of the breakage should be found. Machine conditions which can cause needle breakage and poor quality are: 1) auxiliary cam adjustment; 2) pickers and droppers not operating properly due to damaged cylinder walls; 3) nicked cams due to long continuous operation. These nicks can be

polished out and then reset; 4) pattern drum cams that have worked loose or become worn.

PRINCIPLES OF KNITTING. Vol. II. (Circular Knitting). W. E. Shinn. First ed. Charlotte, N. C., Clark Publishing Co., 1949. 271 p. Price: $3.00.

Principles of Knitting, Volume I, was concerned with the elementary principles of hosiery machinery and hosiery knitting. In Volume II the emphasis is on the larger types of machines for knitted fabric production. Chapters are devoted to the following: Advanced hosiery rib knitting, rib knitting with extra embroidery yarn for ornamentation, multiple-feed knitting with trick wheel control of needle selection, rib fabric production for underwear and outerwear, plain jersey fabric production with multiple-feed latch needle machines, circular spring needle machinery, spring needle fabric production with the loop wheel machine, principles of design for spring needle fabrics, interlock knitting, fabric production with latch needle pattern wheel machines, advanced needle fabrics, and color principles and harmony in knitted fabrics. All of the material in Volume II was published in installment form in *The Knitter.* The author is head of the Knitting Department of the School of Textiles, N. C. State College.

Rib knitted fabric containing inlaid rubber and bare knitted rubber. Robt. H. Lawson & Saml. F. Chiodine (to Scott & Williams, Inc.). USP 2 503 444, Apr. 11, 1950.

A rib-knit fabric having back wales and intervening face wales, the fabric including a series of different inelastic threads, each knitted in regular stitches only, the different inelastic threads being alternated by courses among themselves in different courses of the fabric, every 4th course of the fabric containing a wholly inlaid, uncovered rubber strand, and every second course only of the fabric containing an uncovered rubber strand knitted in alternate wales only, in the second courses.

Seamless hosiery. Paul L. Thurston & Harold Welker (to Interwoven Stockings Co.). Can. P. 459 498, Sept. 6, 1949.

In an article of seamless hosiery, the combination of heel, sole, toe and high splice portions comprising body thread and terry thread knit to form terry looped fabric, and an integral leg portion comprising body thread and wrap thread knit in plating relation at selected stitches to provide a wrap embroidery pattern in the leg portion, the wrap thread extending in a general walewise direction into the high splice portion and being knit at selected stitches in plating relation with the body thread and terry thread to form a continuation of the pattern in the high splice portion.

Spalding mills highlights machine adjustment. E. Dalton White. *Textile World 100,* 110-11 (Apr. 1950).

In order to maintain a high quality of product, Spalding makes a complete check on new machines, then re-checks machine adjustments at the first sign of trouble. Precise settings are made. No. 1 and No. 2 feeds are equalized to insure an even and uniform stitch. Needles are placed and set with great care. More uniform speeds are obtained by the use of gear motors to slow down the shaft speed.

Stop mechanism for knitting machines. Horace C. Grant (to Egan Cotton Mills, Inc.). USP 2 506 078, May 2, 1950.

In a stop mechanism for a knitting machine in which plies of roving are laid between front and rear needles, the combination of an oscillating thread guide swinging from front to rear and having thread guide fingers passing between adjacent needles in such movement, means for resiliently swinging such fingers towards the front of the machine and means for stopping the machine when such movement of the fingers is prevented by an imperfectly laid ply.

Straight bar knitting apparatus. Luchsinger's Handelsgesellschaft. Australian P. 136 529, Jan. 28, 1947.

A device for producing looped fabric comprises 2 sets of needles. The needles are reciprocated on a casing by an operating member for drawing a thread to a zig-zag shape. Means are provided for varying the size of loops.

Tension bar for warp knitting machines. Geo. L. Bolden & John L. M. Morrison (to F. N. F. Ltd.). Can. P. 455 671, Apr. 5, 1949.

A tension bar for warp threads in a textile machine, the bar including a resilient cantilever portion extending between a comparatively rigid support and a light smooth rail over which the threads pass.

Universal knitting means. Jack Fontaine. USP 2 496 204, Jan. 31, 1950.

A knitting means is claimed having a gang of needles each with a body having a laterally outturned end and a movable closing element cooperative with such end; and presser-type bars for

controlling the closing element. Adjustable means are provided including a pattern chain wheel, a push rod operated by the pattern chain wheel, and a bell-crank lever having one arm operated by the push rod, and its other arm communicating motion to the pressure-type bar.

Warp-knit fabric. Kurt J. Winter & John L. Brandon (to United Merchants & Mfrs., Inc.). Can. P. 455 574, Mar. 29, 1949.

A warp-knit fabric simulating in appearance a woven, marquisette-type fabric and composed of independent chain stitch wales formed from front warp threads, and back warp threads forming inlays interlocked in loops of the chain stitches, each inlay thread uniting 2 or more successive chain stitch wales at least upon alternate throws of the back warp threads, the inlays formed by each back warp thread alternating long and short throws, and every chain stitch loop interlocking at least one inlay thread.

Warp knit fabric. John L. Brandon (to United Merchants & Mfrs.). Can. P. 455 573, Mar. 29, 1949.

A substantially inelastic warp-knit fabric composed of a series of top bar threads and a series of bottom bar threads, all of the top bar threads forming loop chains independent of one another but united by the bottom bar threads, the latter having a minimum throw represented by the pattern.

Warp knitting machine. Frank J. Ford (33⅓% each to Max B. Striar & Harry Whittaker). Can. P. 457 575, June 21, 1949.

In a warp knitting machine, the combination of alternate warp-guiding jacks and needles, the needles being adapted to take a yarn other than the warp, with a second set of needles adapted to knit with the warp and the other yarn in sequence.

Warp knitting machine. Richard F. Eshleman (to Am. Viscose Corp.). Can. P. 458 048, July 12, 1949.

In a warp knitting machine, knitting elements comprising guides and needles, a cam shaft for controlling the knitting cycle of the elements, at least one warp supply beam, means for continuously feeding yarn for a predetermined warp from the supply therefor at a predetermined constant speed, and means engaging the yarn proceeding from the supply thereof before it reaches the guides for varying the length of the path of the yarn from the feeding means to the elements in timed relation to the knitting cycle to substantially compensate for discrepancies between the constant feeding rate and varying yarn requirements of the elements during the knitting cycle.

Warp knitting machine. Lambertus te Strake. USP 2 505 372, Apr. 25, 1950.

A warp knitting machine, comprising: 2 needle beds arranged at an acute angle relative to each other, each needle bed including a series of spaced reciprocable latch needles, the needles of one bed being arranged opposite the space between the needles of the other bed, a needle drive associated with the needles of both needle beds for reciprocating the series of needles of one needle bed at substantially the same rate but in opposite direction of movement to the movement of the needles of the other needle bed, 2 warp yarn guide bars, a series of yarn guiding means arranged on each warp yarn guide bar, the warp yarn guiding means being spaced from each other at substantially the same distance as the needles of a series of needles, warp yarn supplying means for supplying warp yarns to the yarn guiding means of the warp yarn guide bars, and a pattern mechanism associated with the warp yarn guide bars for displacing same relative to the series of needles at predetermined intervals in a predetermined manner so as to cause the formation of warp yarn crossings by means of the yarn guiding means and to present the warp yarn crossings alternately to the needles of one series of needles and to the needles of the other series of needles.

Warp knitting technology. Part I. D. F. Paling. *Brit. Rayon & Silk J. 26,* 48-50 (Mar. 1950).

Warp knit machines can produce up to 10 sq. ft. of fabric per minute. Single bar fabrics are not much used as fabrics requiring 2 sets of warp threads are more stable. Warping is to single or section beams; drawing-in is manual. Guides, needles and sinkers are used in the knitting. The functioning of the guide bars, needle bar, sinkers, and pressers is explained. Diagrams also show different stages of the operation.

Special fabrics C 4

Adhesive threads and fabric. Ernst J. Seckel, G. H. Seckel-Holder, G. Anna Groorhuis-Seckel & Jan C. Seckel (to Marimus Seckel). Can. P. 459 032, Aug. 16, 1949.

A woven fabric adapted for use in the uniting together of 2 other layers of fabric, in which each of the threads woven in at least one of the 2 directions has potential adhesive properties, charact-

erized in that the threads are composed of at least one thread of a potentially adhesive material and at least one thread of greater length than the first-mentioned thread, the latter-mentioned thread being disposed in spaced windings around the first mentioned thread.

Belting and the manufacture thereof. Wilfrid Lord & Herbert Riding (to Dunlop Tire & Rubber Goods Co., Ltd.). Can. P. 459 472, Sept. 6, 1949.

A multi-ply rubber-impregnated woven fabric belting, each ply of the fabric being such that the number of yarns per pound of the component threads is not over 420, the weight of each ply is not less than 45 oz. per sq. yd. and the number of weft threads in each ply is not more than 6 per in.

Curtain heading tape. Geo. F. French. Can. P. 459 585, Sept. 13, 1949.

A curtain heading tape comprising a relatively long main tape of interwoven warp and weft threads and a series of small groups of open-ended hook-tubes woven of warp and weft and integrally with the main tape, an approximately equal number of the hook-tubes lying on each face of the main tape, the tubes alternating singly or in small groups on opposite sides of the tape, the adjacent hook-tubes being continuous, the hook-tube straps being formed from a single undivided set of warp threads interwoven with the tape, whereby the tape may be applied to a curtain with either of its sides next the curtain, and either way up.

Decorative rayon fabric and method of making. Alvin W. Boese & Edw. F. Michl (to Minnesota Mining & Mfg. Co.). USP 2 503 024, Apr. 4, 1950.

A method of making a decorative non-woven rayon fabric by transforming the structure of a continuous compacted carded web sheeting essentially consisting of mixed staple cellulose acetate fibers and staple viscose fibers which both have a length of at least approximately one inch, the acetate fibers being in the proportion of about 40 to 65% by weight and being autogeneously interbonded at their crossing points to form a network within which the viscose fibers are distributed, the fibers substantially completely retaining their integrity and uniformity throughout their length and the intermeshed viscose fibers being unbonded and held only by mechanical restraint and frictional contact, the web having a ream weight which will produce a finished fabric having a ream weight in the range of about 15 to

60 pounds; which method comprises subjecting the aforesaid continuous fiber web to drawing under lengthwise tension while in a moistened and heated condition, without disrupting the acetate fiber interbonding, and subsequently drying the web while still under tension to set the altered fiber structure, the drawing being sufficient to reduce the width of the web by about 20 to 50% and turning, crowding, and aligning the fibers, and increasing the lengthwise tensile strength and the ream weight of the web; the recited method serving to form a decorative rayon fabric sheeting having a ream weight in the range of about 15 to 60 pounds, having a high sheen and markedly different lengthwise and crosswise stress-strain and stiffness properties, having a springiness when lightly jerked crosswise and an ability to be pulled out crosswise by at least 20% without rupturing and thereafter to be restored by lengthwise tension, but producing a cloth-like snapping sound and feel when strongly jerked lengthwise, and having a cloth-like "hand".

Flock depilling machine. Harold M. Ratley & Alvin C. Lind (to Nat'l. Automotive Fibers, Inc.). USP 2 503 633, Apr. 11, 1950.

An improved method employed for depilling the flock which consists essentially in passing the flock between rotary brushes which are revolving at different peripheral speeds and in close proximity to each other. Preferably the flock is passed in a downward direction between successive pairs of such rotary brushes and is finally delivered onto a vibrating screen through which it is sifted onto the cement coated surface of the advancing carpet material to form the pile.

Loom for weaving pile fabrics. John F. Lockley (½ to Woodward Grosvenor & Co., Ltd.). Can. P. 458 481, July 26, 1949.

In a loom of the kind specified, the provision of longitudinally extending pile wires mounted adjacent their forward ends for pivotal movement about spaced parallel longitudinally extending axes, the pile wires having their rear ends disposed above the axes, means for oscillating the wires about the longitudinally extending axes thereby to displace their rear ends laterally of the loom relative to the pile warp in coordination with the means for raising and lowering the pile warp, and the wires at a position to the rear of the weaving point having each a guide portion which depends below their respective axes of pivoting, the guide portion serving to control the side of their wire on which the pile threads are raised after they have been lowered.

Mechanical belt. Robt. D. Gartrell, Wm. D. Carroll & Albert W. Hansen (to United States Rubber Co.). USP 2 505 354, Apr. 25, 1950.

A multi-ply conveyor belt formed of a plurality of plies of woven fabric bonded together with rubber to provide a strong, low stretch belt having good troughing properties, most of the plies being formed of pre-stretched, strong and highly compacted coarse cotton warp yarns which yarns have a very low stretch capacity and lie close together in the ply, and have interwoven therewith smaller low twist weft yarns that flatten out in the fabric and are disposed in non-contacting relation with each other so as to impart only a slight crimp to the warp yarns and formed of high tenacity nylon filaments, to thereby provide a conveyor belt having a longitudinal strength that is considerably over 8,000 pounds per sq. in. and a longitudinal stretch of not more than about 5% at break.

Method of and means for producing knotted pile fabrics. Wm. T. Picking. USP 2 505 628, Apr. Apr. 25, 1950.

A method of weaving knotted pile fabrics, comprising the steps of placing a pair of warps between each 2 dents of a main lay, moving the pairs of warps laterally so that they engage the sides of the dents of the main lay, inserting lengths of pile yarn between the pairs of warps, raising each pair of warps out of its opening in the main lay, moving them laterally in opposite directions, and lowering them, one into a lay opening at one side of the opening in which they were originally disposed, and the other into the lay opening at the opposite side of the opening, so that each warp becomes crossed with a warp of the next pair, moving the main lay forwardly so that the crossed warps grip the pile yarns and press them against the fell of the fabric, turning up the ends of the pile yarns behind the crossed parts of the warps, uncrossing the warps and lifting them out of the main lay and allowing them to move laterally, and then lowering them again, forming a shed in the warp, inserting weft, and beating up the weft and pulling the pile knots tight by applying an upward force to the upwardly turned ends of the pile yarns.

Manufacture of imitation astraken fur. Jokubas Finkelsteinas. Can. P. 459 378, Sept. 6, 1949.

A method for the manufacture of imitation astrakan furs consisting in forming loops in a chenille along its length, e.g., by binding the loops by means of a thread, and then securing the chenille thus prepared onto a supporting fabric.

Nylon in papermakers' felts. E. A. Rees & Harold Dahlberg. *Paper Trade J. 130*, 21-5 (May 4, 1950).

The ordinary papermakers' felt generally is an all-wool felted product. This is an account of tests conducted with 2 felts of similar design—one consisting of 100% wool and the other with 25% of a certain nylon composition in its filler. The felts were identical with the one exception of the fiber content of the filler. Samples were subjected to friction across the filling and parallel to the warp and in one direction only so as to duplicate the type of friction occurring on a paper machine. The part-nylon felt showed greater abrasion resistance than the all-wool felt. It is pointed out that while nylon is superior with respect to strength, wearing quality and resistance to chemical and microbiological attack, too great a reduction of the cushion quality and natural elasticity obtained from the woolen fiber could not be tolerated in the production of papermaking felts. The properties of nylon and wool are discussed also.

Open-mesh fabric selvedge. Thos. M. Scruggs (to Bemis Bros. Bag Co.). Can. P. 458 754, Aug. 9, 1949.

An open-mesh fabric comprising spaced warp strands and spaced filler strands, each filler strand having a free end at a marginal edge of the fabric, the edge having a group of engaged warp strands extending the length thereof, the free end of each filler strand being bent over longitudinally with respect to the edge and disposed against one side of the group of warp strands and adhesively secured thereto.

Pile loom. W. T. Picking. Australian P. 136 425, Mar. 9, 1950.

For weaving a fabric having piles formed of the warp ends, a loom in which the beat-up sley on its backward movement moves behind the rear ends of pile wires is characterized in that the rear ends of the pile wires are lowered and raised between the time when the beat-up sley has passed the rear ends of the pile wires in its forward movement and before it passes to the rear of the rear ends of the pile wires on its backward movement.

Tampon, sanitary napkin, surgical dressing, insulating material, filter cartridge, upholstery and the like. Fred W. Manning. Can. P. 459 597, Sept. 13, 1949.

A fibrous article enclosed within a continuous web of promiscuously intersecting, stretch-oriented filaments bonded together by the adhesive character of the filaments to form an integral web.

Tennis ball cover cloth. Albany Felt Co. Australian P. 136 597, May 8, 1947.

To increase the wearing qualities of a tennis ball the covering cloth has warp and filler yarns characterized by being formed partially of wool fibers and partially of nylon fibers, the fibers exposed on the surface of the fabric being adapted to form the outer or wearing side of the ball covering being matted together and including an appreciable quanity of nylon fibers.

Tennis ball cover cloth. Zephir J. Chagnon (to Albany Felt Co.). Can. P. 459 779, Sept. 20, 1949.

A tennis ball covering cloth comprising a woven and fulled fabric having warp and filler yarns, and formed partially of wool fibers and partially of nylon fibers, the fibers exposed on that surface of the fabric adapted to form the outer or wearing side of the ball covering being matted together and including an appreciable quantity of nylon fibers.

Woven pile floor covering. Robt. J. Jackson (to Bigelow-Sanford Carpet Co., Inc.). USP 2 503 583, Apr. 11, 1950.

A woven pile floor covering comprising a woven backing fabric and a surface of pile tufts of soft curly wool yarn having the appearance of caracul, the tufts being spaced apart both warpwise and weftwise, there being no more than 20 tufts to the sq. in., and being disposed warpwise no closer than at every 4th weft, providing spaces on the face of the backing fabric extending both warpwise and weftwise between the tufts, the wool yarn of the tufts having caracul-like curls which cover and conceal the spaces.

Inspection and testing C 5

Cloth burling and mending. Training of operatives. T. G. McLaren. *Fibres 11,* 75-8 (Mar. 1950).

The training of operators for burling and mending work in the woolen and worsted industry is discussed. The methods of burling are cited and the routines to be followed in each of the 2 methods are mentioned. The important steps in mending are next discussed and photographs of some of the steps shown.

Cloth-room operations are being made more efficient. E. Dalton White. *Textile World 100,* 126-27, 220 (Apr. 1950).

Spartan Mills increased efficiency in the cloth room by: 1) installing 3-tier scrays; 2) installing automatic controls and an automatic knock-off on the shears to get a uniform size of cloth roll; 3) hydraulic roller hoist to handle cloth rolls from inspection machines to folding machines; 4) a conveyor to take cloth from grading tables.

Fabric applications C 6

Method of making electric blankets. Raymond J. Cochran (to Simmons Co.). USP 2 490 417, Dec. 6, 1949.

Method of making a 2-ply blanket for containing an electric heater wire, which comprises separately weaving the individual plies, napping one surface of each ply, bringing together strips of the 2 plies so that the inner surfaces of the strips will make a zone of contact with each other while the lateral extensions of the strips will diverge from each other on one side of the zone of contact, then, by the use of a sewing means located in the space made available by the divergence of the extensions, connecting together the opposed inner faces of the plies adjacent the zone of contact by a continuous line of interconnected stitches extending in a row extending parallel to the zone, placing between the extensions adjacent to, and parallel with, the row of stitches, a length of electric heater wire, then bringing together other strip portions of the divergent extensions so as to enclose the wire between the other strip-portions, and inserting another continuous row of similar inter-connected stitches parallel with and spaced from the first row, and repeating the operation so as to form step by step a 2-ply structure in which the plies are connected together by parallel rows of concealed stitches forming parallel pockets between the plies enclosing spaced parallel lengths of heater wire.

Stair treads of thermosetting impregnated fabric. Angus & Co., Ltd., & D. E. F. Canney. Brit. P. 586 409.

A ribbed stair tread is formed of a strip of textile fabric impregnated with a thermo-setting synthetic resin. The fabric may be woven or knitted and is impregnated with a cresol-formaldehyde type resin similar to the resins normally used for friction materials. After removal from the impregnation tank the solvents for the resin are allowed to dry off into the air. The fabric is then

calendered and finally molded to the stair tread formation.

Woven synthetic resin storage battery retainer with ribs. Curtice C. White (to Electric Storage Battery Co.). USP 2 504 608, Apr. 18, 1950.

A retainer for use between the plates of a lead-acid storage battery comprising a knitted fabric of threads of initially molecularly oriented filaments of synthetic resin insoluble in the electrolyte and resistant to the oxidizing and electrochemical reaction in the battery, the fabric provided with parallel ribs integral with the structure of the fabric, the ribs comprising a series of drop stitch loops of shrunken threads at corresponding points in consecutive rows constituting transversely curved rib-like elevations above the adjacent surface of the fabric.

STANDARD FINISHING D

Ancient and modern in milling and scouring. C. O. Clark. *J. Soc. Dyers Colourists 66,* 187-90 (Mar. 1950).

A brief history of the developments in scouring and milling practices is given. The use of Fuller's earth from ancient to modern times is discussed in detail. The use of soap and synthetic detergents in modern times for milling and fulling is also described.

Bleaching. W. W. Triggs (to Buffalo Electro Chemical Co., Inc.). Brit. P. 585 369.

Cellulosic goods, e.g., cotton or linen, containing portions dyed with a naphthol dye, are bleached by heating the goods, damped with less than about 90% (e.g., about 50-90%) of their weight of an alkaline peroxide bleaching solution of a pH less than about 9.5 (preferably about 8.5-9.5), under conditions which prevent any excessive condensation of moisture on or substantial evaporation of moisture from the goods. The damping of the goods may be effected by spraying them with the desired amount of solution, or by immersing them in the solution and then removing excess thereof by squeezing or centrifuging. The heat treatment may be effected with superheated steam or with humidified air above about 212°F, in any conventional steaming equipment.

Braced spreader for fabric treating machines. Harvey Stubbelbine. USP 2 503 524, Apr. 11, 1950.

A spreader for smoothing fabric comprising a U-shaped member for insertion into the fabric with the bight thereof innermost, a crossbar fixed between the free ends of the member, the crossbar having a diameter greater than the outer diameter of the U-shaped member, the ends of the crossbar tapering from opposed sides thereof, and a pair of confronting V-shaped bracing members fixed between the crossbar and the bight.

Cloth handling apparatus. Clarence T. Graham (to Defiance Mfg. Co.). USP 2 503 817, Apr. 11, 1950.

In a cloth handling apparatus comprising an upright cloth receiving chute and an upright cloth discharge chute, the combination of a curved chute having top, sides and bottom walls and arranged and adapted to connect the upright chutes and to provide a passageway for the movement of cloth from the receiving chute to the discharge chute, the curved chute having an opening in the top wall, a gate swingably mounted at the upper edge of the opening and having a tendency to swing across the curved chute under the action of gravity and being substantially coextensive in area with the area of the opening, and manually controlled means arranged and adapted to move the gate in one direction toward operative position between the receiving chute and the curved chute and in the opposite direction to such position that it will close the opening in the wall of the curved chute and will be located out of the path of travel of the cloth through the curved chute, the manually controlled means including a pinion on the gate and an interengaging screw on the receiving chute constructed and arranged to maintain the gate in position to close the opening against the action of gravity and to maintain the gate in position across the curved chute.

Cloth washing apparatus. John O. Lindsay (to Pacific Mills). USP 2 504 554, Apr. 18, 1950.

Apparatus for washing fabrics comprising a plurality of containers arranged in a row and joined together and having front and rear walls, with the upper portion of the front wall of one container being joined to the upper portion of the rear wall of the next succeeding container, the rear wall of each container being at a higher elevation than the front wall thereof whereby when water is admitted to the last container in a series and the last container in the series is filled with water, it will overflow into the next adjacent container and from the next adjacent container to the container adjacent to the next adjacent container, means for feeding a piece of fabric into the first container, means for wetting the fabric as it enters the first container, means for spray-

ing water onto the fabric as it emerges from one container and is fed into the next container, and means for feeding the fabric from one container into the next container and squeezing excess water from the fabric after it leaves one container and before it enters the next container.

Drying characteristics of ramie fiber. John L. Hancock. (Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Chemical Engineering, Ga. Inst. of Technology, 1948-49).

The need for data on the drying of ramie fiber is becoming increasingly important as a result of recent success obtained from research on other phases of the processing of this fiber. It was the purpose of this investigation to obtain data that could be analyzed to determine the mechanism and characteristics of the drying of ramie fiber and fibers in general, and information that would be useful in designing drying equipment for these fibers. This was accomplished by checking existing equilibrium data on degummed garnetted ramie fiber and also by determining the drying mechanism and characteristics of this fiber. This work indicated that the mechanism of drying of garnetted ramie fiber includes the moving of water up to the surface of the fiber by capillary action, where it is removed by evaporation at a rate determined by air velocity and other factors influencing the film characteristics. Details of the effect of different air velocities, variation of humidity, air pockets and nonuniform moisture distributions, influence of slab thickness, and change in drying rate with change in the dry density of the fiber are included in this thesis. (Abstract from: *Research Engr.*, Nov. 1949.)

Equilibrium moisture and drying characteristics of textile fibers. Toy F. Reick. (Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Chemical Engineering, Ga. Inst. of Technology, 1948-49).

In view of the increased importance of ramie, this study was undertaken to fill the need for data that would permit design calculations of dryers for ramie fibers. Data were obtained for decorticated ramie, degummed ramie, degummed opened ramie, and raw cotton. The theory of drying was particularly considered in regard to bringing moisture to the surface of the stock to be dried. Determination of the equilibrium moisture content as a function of percent relative humidity and study of drying characteristics of decorticated and degummed ramie under various conditions constituted the major portion of this investigation. Graphed results show the hysteresis effect exhibited by decorticated and degummed ramie fibers to be most pronounced at low temperatures and high humidities. Because of the presence of water-soluble materials in the raw fiber, the equilibrium moisture content of decorticated ramie is usually at least 60% higher than that of degummed ramie, which in turn surpasses that of the opened ramie. The undegummed cotton has a slightly higher equilibrium moisture content than does the opened, degummed ramie. (Abstract from: *Research Engr.*, Nov. 1949).

FUNDAMENTALS OF DETERGENCY. Wm. W. Niven, Jr., Reinhold Publishing Corp., New York; 1950; 256 p. Price: $5.50.

This work, of interest to anyone in the food products industry, soap, textile, rubber, drug, ink, printing, laundering and paint industries, fills the need for a comprehensive reference in the detergents field. Neither too generalized nor too specialized, it discusses the theory and applications of detergents for those who have reasonable technical backgrounds. The first half of the book treats fundamental considerations of the detergent process; nature and properties of detergent solutions and of builders; and effects of builders on solutions. In the second half, laundering is chosen as the example of practical application of detergent principles. A brief appendix follows, discussing the theory of Cassie and Palmer on the effect of electrolytes on surface activity.—*Chem. Industries.*

Laundering; blue-fluorescent substances. Lever Bros. & Unilever, Ltd. & R. Thomas. Brit. P. 585 549.

White cellulosic textile materials of the class used for the manufacture of articles requiring frequent laundering are rinsed, in the form of piece goods, yarn or fiber, in an aqueous bath containing a very small proportion of a substantive blue-fluorescent substance. Advantageously the aqueous bath contains not more than 0.05% and suitably between 0.01% and 0.001% of the blue-fluorescent substance calculated on the weight of the textile material to be treated.

Mechanical displacement in scouring. G. L. Atkinson. *Textile Mfr. 76,* 187-88 (Apr. 1950).

The scouring of wool cloth is discussed and suggestions are given for improving the scouring operation and reducing the faults caused by mechanical action.

Modern textile auxiliaries. A. J. Hall. *Silk &*

Rayon 4, 504, 507-08, 510 (Apr. 1950).

This is a continuation of the listing of textile auxiliaries with brief descriptions of their chemical and physical properties. 30 compounds are listed. See also TTD: *7*, 384.

Modern textile bleachery employs extensive controls in processing and air conditioning. Anon. *Instrumentation 4*, 7-10 (1st Quart. 1950).

The straight-line continuous processing equipment in the Grace Bleachery of Springs Cotton Mills is described and illustrated with diagrammatic sketches. The various instruments used for control purposes are particularly noted.

Resinous condensation products. W. W. Triggs. Brit. P. 587 231.

A resinous condensation product useful as a textile assistant, paper or leather softener, adhesive, wetting agent, emulsifying or de-emulsifying agent, anticeptic agent, insecticide, flotation agent, or as a molding composition or in photographic developers, is prepared by heating cyanamide or guanidine with dextrose, sucrose or starch and a member of the group consisting of casein, fatty acids and primary aliphatic amines containing 6 or more carbon atoms.

Textile application of synthetic waxes. Jack H. Dollinger. *Rayon & Syn. Tex. 31*, 106-07 (May 1950).

Waxes are used in many phases of textile processing either by application to various fibers during processing or to the finished fabric. Most natural fibers contain a certain amount of wax or waxy material which gives resiliency and protection against atmospheric influence, but since during the manufacturing process these waxy elements are removed by boiling or scouring, the loss of workability and elasticity of the fiber is returned to the fiber by means of wax-like materials. Several synthetic waxes are discussed and their application to textile processes such as water-repellent coatings, delustering, screen printing, etc. are noted.

Treating textiles with liquids, etc. A. P. Thurston. Brit. P. 587 574.

Glass fibers are colored by coating them with a composition comprising a protein, a formaldehyde-setting dye, and an insolubilizing agent such as formaldehyde which subsequently to the coating operation renders both the protein and the dye insoluble in water and organic solvents. Alternatively, a solution of a protein and a formaldehyde-setting dye may be applied to the fibers and the coating may be subsequently rendered insoluble by treatment with formaldehyde. The protein may be gelatine, glue, plasticized glue, pectin, or albumin. The treatment may be applied to yarns, fibers, strands, or fabrics of glass.

Tubular fabric straightener and method. Louis G. Blumenbaum & Roland E. Langlois (to Draper Bros. Co.). USP 2 503 705, Apr. 11, 1950.

In the processing of tubular fabric, the method of advancing and lineally rectifying the fabric tube which comprises causing the fabric to travel longitudinally in relatively flat tubular form, rotatively lineally contacting the inner and outer faces of the fabric at each of a plurality of opposed locations spaced transversely across the fabric tube, and in the event of lateral deviation of the fabric oppositely tilting the lines of contact through equal angles simultaneously at such locations and thereby exerting a transverse unidirectional straightening action on the traveling fabric tube.

Whiter wool. R. W. Moncrieff. *Textile Mfr. 76*, 184-86 (Apr. 1950).

This is a discussion of the 3 general methods in use for bleaching wool: 1) stoving, 2) hydrogen peroxide bleaching agents, and 3) optical bleaching agents. The substances and procedures used in each of these 3 methods are discussed.

DYEING AND PRINTING E

Application of colorless fluorescent dyes. E. C. Caspar. *J. Soc. Dyers Colourists 66*, 177-81 (Mar. 1950).

A brief history of and methods of applying colorless fluorescent dyes are given. The whitening agents used most generally on cellulosic fibers are derivatives of diaminostilbenedisulfonic acid. These whitening agents are used in the textile, paper, detergent, and laundry industries to achieve a degree of whiteness not previously possible.

APPLICATION OF VAT COLORS TO COTTON PIECE GOODS; CONTINUOUS METHODS USING WILLIAMS UNITS. New York, Gen. Dyestuff Corp., n.d. 16 p.

This pamphlet includes discussion of the following: principle of the Williams Unit; dyeing vat colors from reduced pad, using Williams Unit as booster; continuous pigment dyeing eliminating the pre-drying of fabric before reduction; consumption of caustic soda and hydrosulfite for dye-

ing vat colors on the Williams Unit; drying vat pigments on fabrics before reduction; use of dextrine in the reduction unit; and dextrine used with vat dyestuffs other than vat blues. Titration procedures are given for use of standard solutions of iodine and acid for titration of sodium hydrosulfite and caustic soda on the Williams Unit.

Color in woolens and worsteds. D. R. Christie. *Fibres 11,* 83-5 (Mar. 1950).

A simple explanation of the methods of obtaining primary, secondary, and tertiary colors is presented. The relationship between wool quality and color blending is discussed. Tartans and Scotch checks are cited as examples of the diversity of color combinations which can be produced by proper manipulation of the individual colors. Finally the use of twisted yarns, in which mixed and self colored yarns are combined, in the manufacture of various fabrics is noted.

Development of sulfuric acid esters of leuco vat dyes using hydroxylammonium salts. Herbert L. Sanders (to General Aniline & Film Corp.). USP 2 503 300, Apr. 11, 1950.

A process of developing color on a textile material from a printing paste containing the leuco sulfuric acid ester of 3,4,8,9-dibenzpyrene-5,10-quinone which comprises steaming the textile surface carrying the printing paste in the presence of a hydroxylammonium salt having the formula:

$$NH_3OHX$$

where X is the acid radical of the group consisting of chloride, sulfate, and the thiocyanate radicals.

Differential saponification treatment of cellulose ester materials. Croyden M. Whittaker, Henry A. Thomas, Clifford C. Wilcock & Chas. P. Tattersfield (Courtaulds, Ltd.). Can. P. 457 850, July 5, 1949.

A process of obtaining dyeing effects on cellulose ester materials which comprises subjecting local areas only of the material to the action of pressure, then treating with a saponifying agent and thereafter dyeing in a dyebath containing a dyestuff having a greater affinity for the saponified areas of the material and a second dyestuff having a greater affinity for the unsaponified areas.

Dyed cellulose ether and dyeing of fabrics therewith. Wm. B. Carroll, Jr. (to Dan River Mills, Inc.). Can. P. 458-071, July 12, 1949.

A method of dyeing textile material with dyed alkyl cellulose ether, which cellulose ether is originally in finely divided, fibrous form and is dyed by subjecting it in the solid state to the dissolved dyestuffs and developing solutions suitable for dyeing raw stock cotton and thereby producing a dyed cellulose ether in completely developed condition, comprising dissolving the dyed alkyl cellulose ether in an aqueous caustic alkali solution, treating the textile material with this alkali solution, treating the textile material with an acid solution that precipitates the dyed alkyl cellulose ether onto the fibers of the textile material, washing and drying the textile material.

Dyeing and printing acetate fabrics. Herman P. Baumann. *Can.Textile J. 67,* 66-8, 70, 72 (Apr. 14, 1950).

This is a discussion, from the viewpoint of the dyer, of the various methods of dyeing and printing cellulose acetate fabrics. Specific dyes are mentioned and typical formulas are given for various types of dyeing and printing.

Dyeing and scrooping textiles. Richards Chemical Works. Brit. P. 586 155.

An oil-in-water emulsion, which may be used to impart scroop to yarns or fabrics, has as the disperse phase, a mono-ester or esters of a glycol having 2 or 3 C atoms with a higher fatty acid or mixtures of higher fatty acids having 10 to 14 C atoms, and a continuous phase comprising an aqueous solution of a film-forming protective colloid, i.e., a substance soluble in water to give a solution which on evaporation in thin layers forms continuous films, such as gelatin, glue, gum arabic, gum ghatti, gum karaya, gum shiraz, gum tragacanth, alkali casein, methyl cellulose, soluble starch, soluble alginates, polyvinyl alcohol, locust bean gum and the product obtained by adding aluminum formate to a solution of casein in dilute aqueous alkali referred to below as "casein-aluminum formate complex."

Dyeing of direct cotton dyes on Fibro carpet yarns in hard water. M. V. Campbell. *J. Soc. Dyers Colourists 66,* 120-32 (Feb. 1950).

The range of direct cotton dyes available for use in hard water is restricted by 2 important factors: a) many direct dyes are insoluble in or precipitated in hard water at the boil; b) others are so sensitive to the large amounts of electrolytes present that in the absence of added sodium chloride they give a heavy "strike." However, the addition of small amounts of Calgon T can be used to either redissolve precipitated dyes or to reduce "strike." Also discussed are other sequestering and dispersing agents and their effect in producing satisfactory dyeings in hard water.

Dyeing of rayon fiber fabrics. A. W. Bakker. *Enka Breda Rev. 3,* 8-15 (Feb. 1949); *in Dutch.*

The various pretreatments to which rayon fiber fabrics are subjected, such as singeing, desizing, caustic treatment, scouring and bleaching are discussed. The apparatus which can be used for the dyeing of rayon fiber is reviewed, as well as the method of dyeing by means of such apparatus.

How to dye with Coprantine colors. M. G. Stern. *Textile World 100,* 132-33, 135 (Apr. 1950).

Coprantine fits into the gap between direct dyes and vat colors. They are azo dyes capable of forming complex copper compounds and can be applied to cotton, viscose rayon, and linen. Coprantine dyes are applied like direct dyes, then aftertreated with dilute solutions of copper salts. The result is a dyeing that has unusual fastness to light and washing. Copper sulfate and acetic acid, Coprantine Salt II, or Coprantine Fixer WF may be used in after treating. Step by step explanations are given on: 1) how to dissolve dyestuffs; 2) how to dye piece goods in a dye beck; 3) 5 good after treatments; 4) how to dye yarn in a package machine; 5) how to dye skeins in various machines; and 6) how to strip package- or skein-dyed yarn.

Identifying textile fibers for dyeing. E. A. W. Boyce. *Am. Dyestuff Reptr. 39,* 292 (May 1, 1950).

See TTD: *7,* 306.

Interesting example of cooperation. Anon. *Am. Dyestuff Reptr. 39,* P257-59 (Apr. 17, 1950).

Data obtained from extensive tests made by the Wash Fastness Subcommittee (AATCC) are summarized in a report "Complaints on Colored Fabrics in Laundering," the text of which is given. Before release of this information it was discussed with representatives of the laundry industry who prepared a report of their views on the AATCC report, the text of which is also given. The AATCC report contends that laundry practices can be improved and indicates how improvements can be made. The laundry industry holds that the removal of color by washing is not a problem of the laundry industry alone, that it is also the problem of the dyer and printer. Better selection of dyes and techniques of application are considered essential. The Wash Fastness Subcommittee is now engaged in a program to develop a new procedure which will replace the present #3 Wash Test.

Mechanism of dyeing. Anon. *Brit. Rayon & Silk J. 26,* 64 (Mar. 1950).

(Report of a talk by T. Vickerstaff.) Man-made fibers have influenced ideas about the mechanism of dyeing. The largest group of these fibers are the regenerated celluloses. There are 4 variables affecting the dyeing characteristics of these: 1) denier, 2) compactness and crystallinity of the fiber structure, 3) availability of molecular points of attachment for dye molecules, 4) the strength of these attachments. The first 2 affect the rate of dyeing; the last 2 the equilibrium. Cellulose acetate uses special types of dyestuff. Nylon uses the cellulose acetate or acid wool colors. A brief explanation of the points mentioned above is given.

Method of screen printing. Herbert Bucklin (to Goodall-Sanford, Inc.). Can. P. 459 834, Sept. 20, 1949.

The method of screen printing to avoid juncture marking in a color of a pattern having regular repeats in which the color extends continuously between adjacent repeats which consists in preparing 2 screens for the color, one screen including the entire repeat of the color, the second screen including the front section of the repeat of the color, the 2 screens being placeable the one on one, and the other on the other, of adjacent repeats to include overlapping sections with the overlapping sections together covering at least once the end section of the first repeat, applying and printing with both screens each repeat to print each front section and each end section of each repeat twice and while the colors applied are in condition to blend.

New continuous dyeing process. Anon. *Textile Mercury & Argus 72,* 544-46, 574 (Apr. 7, 1950).

See TTD: *7,* 392.

Nylon-tricot dyeing calls for careful dye selection. Frederick A. Alter. *Textile World 100,* 141, 222, 224, 226 (Apr. 1950).

Heat-setting of nylon tricot fabric can be compared to preshrinking other fabrics. It should be carried out at approximately 425°F, then uniformly cooled. The fabric should be thoroughly cleaned before heat treating; it is usually not necessary to bleach the fabric first. The better acetate dyes are the best for nylon where good fastness is required. Some fast to light direct colors are used where light fastness is the most important requirement. Acid-type dyes, chrome types and vat colors are satisfactory under certain conditions. These are discussed briefly. Blends of nylon and wool, nylon and silk, nylon

and cotton, or nylon and rayon are discussed briefly as to dyeing properties.

Package dyeing of synthetic filament yarns. H. F. C. Wilcox. *Rayon & Syn. Textiles 31*, 90 (May 1950).

This is a brief summary, in outline form, answering the questions 1) "why and when does one use skein dyeing?" and 2) "why and when does one use package dyeing?" Under 1) two reasons are given and under 2) 12 reasons are listed.

Recent trends in the search for new azo dyes. II—Dyes for acetate rayon and nylon. A. H. Knight. *J. Soc. Dyers Colourists 66*, 169-77 (Mar. 1950).

The chemistry of various azo dyes used in the dyeing of acetate rayon and nylon is discussed. The Ionamine dyes are mentioned and some of their shortcomings, such as variable hydrolysis rates, their hypsochromic effect, and relatively poor light fastness properties, are cited. Discussed next are the dispersed water-soluble dyes represented by Dispersol Fast Orange A, Dispersol Fast Scarlet B, Celliton Fast Scarlet RN, etc. Finally several dyes for nylon such as Perlon Fast Yellow G, and Perlon Fast Red 3 BS are described. For Part I see TTD: *7*, 392.

Relation between the rate of formation of chromium complexes of a dye and its value in the metachrome process. E. Race. *J. Soc. Dyers Colourists 66*, 141-48 (Feb. 1950).

A study was made of the rates of formation and nature of the chromium complexes of selected dyes in order to ascertain whether or not a relationship exists between the rate of complex formation and the suitability of a dye for application on the metachrome process. The results indicated that in the case of azosalicyclic acid compounds containing a sulfo group the dyes are unsuitable for use in the metachrome process. It was also found that in general the greater the rate of chromium-dye complex formation the more suitable is the dye for application by the metachrome process.

Role of the electric double layer in the sorption of acids and dyes by wool. P. Alexander & J. A. Kitchener. *Textile Research J. 20*, 203-14 (Apr. 1950).

The purpose of this paper is to show that the various phenomena associated with the sorption of acids and dyes by wool can be readily understood in terms of the recognized properties of an electrical double layer. Dyes are taken up either as gegenions to the charged groupings within the fiber or as leading ions bound by non-Coulombic forces and carrying inorganic gegenions with them into the fiber. Effect of salts and acids on dyeing equilibria can be formulated by means of the law of mass action used in conjunction with the appropriate adsorption isotherm. Activity coefficient data for dye solutions are needed before further progress can be made.

Some applications of modern microscopy to the study of chemical phenomena and in the dyeing and printing of textiles. G. L. Royer. *ASTM Bull. 165*, 46-8 (Apr. 1950).

This is a brief discussion of microscopy as applied to the study of problems in the dyeing and printing of textiles. The various kinds of microscopes available, and their specific uses are noted. Photomicrography is mentioned briefly also. 22 references.

Some aspects of printing thickenings (especially starch thickenings.) J. Zonnenberg. *J. Soc. Dyers Colourists 66*, 132-40 (Feb. 1950).

This paper deals mainly with the application and technical examination of thickening agents based on starch. A short summary of modern ideas on the structure and properties of starch are given, and a detailed discussion of the stability of thickenings is presented in which the following factors are discussed: 1) effect of mechanical stirring on thickening power; 2) mutual influence of thickening powers of agents in mixtures; 3) color yield, levelling power, and character.

Some practical aspects of high-temperature dyeing. R. D. Robinson & C. L. Zimmerman. *Am. Dyestuff Reptr. 39*, P250-56 (Apr. 17, 1950).

Dyeing at elevated temperatures increases the rate of diffusion of the dye into the fibers to such an extent that dyeings normally requiring hours can be produced in a few seconds. The dyeings thus obtained are equal to or superior to those obtained by normal procedures. It is now possible to dye wool at 25 yds. per min. with the Uxbridge high temperature continuous dyeing machine. The development of continuous dyeing at elevated temperatures and its application in plant scale operation are described.

Technique of naphthol dyeing. R. H. Nuttall. *Can. Textile J. 67*, 50-2 (May 12, 1950).

For successful naphthol dyeing, much care must be exercised in preparation and application of naphtholate, diazotization and neutralization of bases, temperatures both of color salts and bases, and use of acetic acid. Included in this discussion

are the following topics: naphtholation of different materials, naphthol dyeing on hosiery, dyeing of packages, beam dyeing of naphthols, rawstock-cotton and rayon (800 lbs.), dyeing piece goods, and use of acetic acid.

Tension effects in roller printing. Anon. *Textile J. Australia 24,* 1028, 1030-31, 1035-36 (Jan. 20, 1950).

See TTD: *7,* 49.

Textile decorating. Saml. Lee (to Interchemical Corp.). USP 2 504 136, Apr. 18, 1950.

A low-crock textile-decorating composition comprising a water-in-lacquer emulsion, the lacquer phase of which comprises a pigmented colloidal dispersion of (1) a granular thermoplastic copolymer of a monovinyl aromatic compound in which the vinyl group is attached to a C atom of the aromatic nucleus and an aliphatic conjugated diolefin and (2) a solution of a thermosetting resin in a volatile organic solvent which is a nonsolvent for the copolymer but has a swelling action therefor, the ratio of the copolymer to the pigment ranging from 0.05:1 to 100:1 by weight, the copolymer comprising the product prepared by polymerizing the vinyl aromatic compound in an aqueous emulsion at a temperature about 50°C until at least 90% of the vinyl aromatic compound is polymerized and thereafter adding between 2.3 and 3.5 moles of the conjugated diolefin per mole of the vinyl aromatic compound initially present and polymerizing the conjugated diolefin in the emulsion at a temperature above 50°C.

Textile instruments. XIV—Instrument control of dyebaths (con't.). R. W. Moncrieff. *Fibres 11,* 117-18 (Apr. 1950).

Several instruments used to control dye-baths are described. These instruments are used for the following purposes: 1) control flow of steam; 2) record times and temperatures; 3) maintain constant temperature. (For Part I see TTD: *7,* 393.)

Textile material. Geo. W. Seymour & Geo. C. Ward (to Camille Dreyfus). Can. P. 459 890, Sept. 20, 1949.

Process for the coloration of formed cotton textile materials in fluorescent shades, which comprises suspending a formed cotton textile material in benzene containing acetic acid, acetic anhydride and perchloric acid, maintaining the cotton textile material suspended therein until esterified to an acetyl value of 14 to 25%, calculated as acetic acid, washing the textile material in benzene, drying it and then washing in water, again drying the material, and then dyeing the acetylated cellulose directly with an aqueous-alcoholic solution of the hydrochloride of diethyl-m-amino-phenolphthalein.

Theoretical aspects of fluorescence, luminescence, and phosphorescence. G. G. Taylor. *J. Soc. Dyers Colourists 66,* 181-86 (Mar. 1950).

The theoretical concepts underlying fluorescent, luminescent, and phosphorescent phenomena are presented, and the differences in the 3 terms are explained. The effect of the quality of various illuminants on fluorescence and phosphorescence is discussed, and a number of textile and non-textile applications for these materials are given.

Treatment of textile materials. Claude G. Bonard (to Can. Celanese Ltd.). Can. P. 459 643, Sept. 13, 1949.

Process for improving the color fastness of dyed textile material which comprises impregnating a dyed textile material having a basis of an organic derivative of cellulose with an aqueous solution of cyanamide and then drying and heating the impregnated material until a difficulty soluble nitrogeneous compound is formed.

Warp dye beam. Homer V. Lang. USP 2 505 498, Apr. 25, 1950.

A warp dye beam comprising a pair of head members and a perforated cylinder, the head members on their inside surfaces having annular rims extending therefrom with bosses cast integral with the rims and the head members on the inside of the rims, each rim having a slot extending entirely therearound and extending through the rims down to the supporting bosses.

Warp dyeing. G. S. Marr. *J. Soc. Dyers Colourists 66,* 108-20 (Feb. 1950).

A complete description of beam and ball warp dyeing machinery is given and the many ways in which they can be used are cited. Representative fabrics whose component yarns are warp dyed are mentioned and some of their specifications and characteristics are given. A few of the fabrics cited include ticking, handkerchiefs, gingham, poplin, gabardine, denim, and lining and proofing cloths.

SPECIAL FINISHING F

Ammonium salt of polymeric N-hydroxymethyl amic acids and water-repellent compositions containing them. Martin E. Cupery (to E. I. duPont de Nemours & Co.). USP 2 504 003, Apr. 11, 1950.

New hydroxymethyl derivatives of polymeric amic acids can be applied to textiles from solution or dispersion in water, aqueous ammonium hydroxide, or organic solvents containing from 1 to about 20% total solids, by dipping, spraying, spreading, brushing and similar methods. After treatment the material is dried at ordinary temperatures and then baked for a sufficient time at temperatures above 100°C to bring about insolubilization of the coating.

Anti-felt treatment of wool. Wolsey, Ltd. & P. Alexander. Brit. P. 586 020.

The tendency to felt of materials consisting wholly or partly of wool or like animal fibers, e.g., yarn, fabrics or garments, is reduced by immersing them for a few minutes in a bath containing an aqueous solution of potassium or sodium permanganate and acid, the pH value of which is not more than 2.0. The treatment may be effected at room temperature or higher temperatures. Discoloration of the materials may be subsequently removed by treatment in an acidified solution of a reducing agent such as sodium sulfite or sodium bisulfite or by hydrogen peroxide, or by strong acid, and the materials may be treated with acid prior to treatment with the reducing agent.

Anti-shrinking treatment of textiles. Monsanto Chemical Co. Australian P. 135 915, Feb. 2, 1950.

The natural handle of textile fabrics and yarns, composed entirely or partly of wool, is preserved while the shrinkage on repeated laundering is practically reduced to zero, by a process which comprises applying to the fabric up to 16% of a melamine resin on the weight of the dry untreated fabric, curing the resin, moistening the treated fabric and removing from it the internal stresses created during manufacture and processing. The preferred resin is an amorphous monomeric methylol melamine.

Application of dispersed coating materials to cellulosic fibers. John H. Daniel, Jr., Randall Hastings, Lucius H. Wilson & Chester G. Landes (to Am. Cyanamid Co.). Can. P. 458 318, July 26, 1949.

A method of impregnating fibrous cellulosic material with large quantities on the order of 50-100% of its weight of an organic impregnating agent which comprises preparing a water suspension of the fibrous cellulosic material at 0.5-6% consistency adding to the suspension a cationic polyamine-halohydrin resin in amounts of at least 1% of the weight of the organic impregnating agent, allowing the suspension to stand at a pH of about 3 to about 8 for at least 30 minutes, then adding the requisite quantities of an aqueous dispersion containing the impregnating agent in deflocculated condition, flocculating the impregnating agent in the presence of the suspended cellulosic fibers by the action of the cationic polyamine-halohydrin resin, and thereby depositing large quantities on the order of 50-100% by weight of the impregnating agent uniformly on the fibers.

Art of imparting crease resistance to cotton fabrics. Wm. R. MacIntyre (to Jos. Bancroft & Sons Co.). USP 2 504 857, Apr. 18, 1950.

In the imparting of crease resistance to cotton fabrics, the process which consists in impregnating the fabric with an aqueous solution of a mixture of a methylol melamine and a methylated methylol melamine with a ratio ranging from 80% to 20% to 20% to 80% of one resin to the other on the solids basis by weight, the methylol melamine being selected from the class consisting of di-, tri-, and tetramethylol melamines, and the methylated methylol melamine being selected from the class consisting of those having at least one unmethylated methylol group and having a minimum of 3 methylol groups a minimum of 2 of which are methylated, the amount of resin solids applied to the fabric being equal to that applied with a single application of solution with 100% solution pick-up by weight on the fabric in the dry state where the solution contains from 3% to 20% resin solids by weight of the solution, drying the fabric and heating to polymerize the resins to the water insoluble state.

Cellulose derivatives; resinous condensation, etc. products. C. G. Bonard. Brit. P. 586 549.

Textile and other materials having a basis of substances consisting of long chain molecules containing hydroxy, thio, amino or other groups reactive with the isocyano or isothiocyano radical are caused to react with organic di- or polyisocyanates or iso-thiocyanates. The treatment reduces or removes the solubility of cellulose acetate yarns and other materials in organic solvents and increases the melting point and heat resistance. The affinity for dyes is modified. The treatment increases the hydrophobic character of the materials and raises the ratio of the wet to the dry strength. The treatment may be effected by impregnating the materials, e.g., yarns in hank or fabric form, with the reagent and then heating to effect the desired reaction.

Compound and method for treating textile ma-

terial. Carl R. Bellwood (to The Cravenette Co.). Can. P. 458 376, July 26, 1949.

The method of treating fibers and fabrics to render them water repellent, which consists in subjecting them to the action of an aqueous solution of an alkali-metal salt of ortho stearyloxybenzoic acid, and then drying and baking the material being treated.

Improvement of the resistance of cotton cloth to soiling. Wm. P. Utermohlen, Jr. *Am. Dyestuff Reptr. 39,* P262-64 (Apr. 17, 1950).

This is an account of work done at the Institute of Textile Technology, under the sponsorship of the RMA, on improving the resistance of cotton cloth to soiling. Treatments used for this purpose included: starch in various amounts; anionic and cationic softening agents; durable and nondurable hydrophobic finishes; prepolymerized vinyl-emulsion polymers; urea-formaldehyde condensates polymerized in the cloth; and treatments producing chemical alterations in the cotton cellulose, such as partial acetylation. The treated cloths were soiled with various kinds of pigments, from liquid dispersions or in a dry state, and washed. The effects of the various treatments upon the ease of soiling and ease of soil removal are presented and discussed.

Microbiological deterioration of organic materials: its prevention and methods of test. Edw. Abrams. U. S. Natl. Bur. of Standards. PB 99 549, Nov. 1948. 44 p. photos, tables. *Bibl. of Technical Reports 13,* 114 (Mar. 1950). 25¢ (Available from Supt. of Documents, U. S. Govt. Printing Office, Washington 25, D. C.).

Presents a detailed review of the literature on the microbiological deterioration of organic and fibrous materials. Representative problems incidental to the development of test methods for the evaluation of mildew resistance and the development of mildew resistant materials are given. The most widely recognized test methods for the evaluation of mildew-resistance and rot-resistance are listed. A wide variety of fungicides for different uses is classified accordng to effectiveness. Plastics and plasticizers and related materials are rated according to their susceptibility to support mold growth.

Plastics in fabric coating. D. S. Plumb. *India Rubber World 122,* 62-4 (Apr. 1950).

New plastics suitable for coating textile materials, their properties and methods of application are discussed. Included in the discussion are the following: vinyl coatings, calendered coatings, solution coating, and organosols and pastes.

Process for obtaining transparent effects on regenerated cellulose fibers. Paul W. Steinlin (to Aktiengesellschaft Cilander). USP 2 506 040, May 2, 1950.

A multiple step process for obtaining transparent effects on a fabric consisting predominantly of regenerated cellulose staple fiber comprising a first step of treating the fabric with caustic soda of the order of 30° Baumé at a temperature of —5° to 25°C for a period of time of the order of 5 to 10 seconds and a second step comprising treating the material with caustic soda of the order of 30° Baumé at a temperature of the order of 45°C for a period of time of the order of 5 seconds.

Process for obtaining transparent effects on regenerated cellulose fibers. Paul W. Steinlin (to Aktiengesellschaft Cilander). USP 2 506 041, May 2, 1950.

A multiple step process for obtaining transparent effects on a fabric consisting predominantly of regenerated cellulose staple fibers comprising treating the fabric with caustic soda of mercerizing strength of a temperature of —5° to 25°C for a period of time of the order of 5 seconds, then treating the fabric with sulfuric acid of 40° to 52° Baumé at a temperature ranging from —5° to 20°C for a period of time of the order of 5 to 7 seconds removing free sulfuric acid, and then treating the fabric with hot caustic soda of mercerizing strength at temperatures of the order of 60°C for a period of time of the order of 5 to 10 seconds.

Process for obtaining transparent effects on regenerated cellulose fibers. Paul W. Steinlin (to Aktiengesellschaft Cilander). USP 2 506 042, May 2, 1950.

A multiple step process for obtaining transparent effects on a fabric consisting predominantly of regenerated cellulose staple fibers comprising treating the fabric with hot caustic soda of mercerizing strength at temperatures of the order of 60°C for a period of time of the order of 5 to 12 seconds, and then treating the fabric with sulfuric acid of 40 to 52° Baumé at a temperature ranging from —5° to 20°C for a period of time of the order of 5 to 9 seconds.

Process for obtaining transparent effects on regenerated cellulose fibers. Paul W. Steinlin (to Aktiengesellschaft Cilander). USP 2 506 043, May 2, 1950.

A multiple step process for obtaining transparent effects upon a fabric consisting predominantly of regenerated cellulose staple fibers comprising treating the fabric with hot caustic soda of mercerizing strength at temperature of the order of 50°C for at least 5 seconds but not substantially more than 5 seconds, then treating the fabric with sulfuric acid of 40° to 52° Baumé at a temperature ranging from --5° to 20°C for a period of time of the order of 5 to 7 seconds, and then treating the fabric with caustic soda of mercerizing strength at temperatures of —5° to 25°C for at least 5 seconds but not substantially more than 5 seconds.

Process for obtaining transparent effects on regenerated cellulose fibers. Paul W. Steinlin (to Aktiengesellschaft Cilander). USP 2 506 044, May 2, 1950.

A multiple step process for obtaining transparent effects on a fabric consisting predominantly of regenerated cellulose staple fibers comprising treating the fabric with a hot caustic soda of mercerizing strength at temperatures of the order of 55°C for a period of time of the order of 5 to 8 seconds, removing free caustic soda from the fabric, and then treating the fabric with a hot caustic soda of mercerizing strength at temperature of the order of 45°C for at least 5 seconds but not substantially more than 5 seconds.

Process for obtaining transparent effects on regenerated cellulose fibers. Paul W. Steinlin (to Aktiengesellschaft Cilander). USP 2 506 045, May 2, 1950.

A multiple step process for obtaining transparent effects on a fabric consisting predominantly of regenerated cellulose staple fibers comprising treating the fabric with a hot caustic soda of mercerizing strength at temperatures of the order of 50°C for a period of time of the order of 5 to 10 seconds, removing free caustic soda from the fabric, and then treating the fabric with caustic soda of mercerizing strength at a temperature of —5° to 25°C for at least 5 seconds but not substantially more than 5 seconds.

Process for obtaining transparent effects on regenerated cellulose fibers. Paul W. Steinlin (to Aktengesellschaft Cilander). USP 2 506 046, May 2, 1950.

A process for obtaining soft transparent effects on a fabric consisting predominantly of cell-wool made of regenerated cellulose, the process comprising a first step of treating the fabric with sulfuric acid of about 45°-50° Bé. substantially

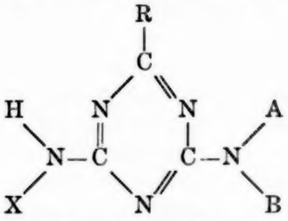
at 0°-15°C for substantially 8-10 seconds, and a second step of treating the fabric with an aqueous caustic soda solution of about 30°36° Bé. substantially at 50°C for substantially 8-10 seconds.

Production of water-repellent textiles. Frank K. Signaigo (to E. I. duPont de Nemours & Co.). USP 2 505 259, Apr. 25, 1950).

A water-repellent textile containing the reaction product of a soluble titanium compound with a long-chain fatty acid ester of a monomeric polyhydric alcohol, the ester containing at least 1 alcoholic hydroxyl and its long-chain fatty acid component having from 12 to 20 C atoms.

Resinous condensation products; guanamines; treating textiles. Am. Cyanamid Co. Brit. P. 586 429.

A finishing composition for textiles, e.g., of cotton, linen, wool, viscose, cellulose acetate, rayon and silk, comprises a guanamine of the formula:



in which (a) R is an aliphatic or cyclo-aliphatic group containing at least 7 C atoms and X, A and B are hydrogen or monovalent aliphatic groups, or (b) in which at least one of A, B and X is a monovalent aliphatic, cyclo-aliphatic or aromatic group and R is hydrogen, an aliphatic, cyclo-aliphatic or aromatic group and A, B, X and R contain a total of at least 7 C atoms, or a formaldehyde condensation product thereof, and a urea-, thiourea or melamine-aldehyde resin.

Resins can improve good fabrics. Ralph M. Fischer. *Can. Textile J. 67*, 53-6 (May 12, 1950); *Textile Bull. 4*, 113-14, 116-18 (Apr. 1950).

Successful application of resins on good fabrics will, it is claimed, eliminate any undesirable fiber characteristics and add to the desirable qualities of performance. Resin applications to rayon are discussed and the uses of melamine formaldehydes in particular are noted. Also discussed are control of shrinkages and a new method of applying melamine formaldehyde resins to wool that eliminates the need for high temperatures. Wrinkle resistance and crease resistance testing are considered briefly.

Rubber bonding. J. M. Buist & W. J. S. Naunton.

Trans. of the Inst. of Rubber Ind. 25, 378-406 (Apr. 1950).

Types of bonding agents and the testing of textile bonding agents are described and a new method for testing to replace the ASTM method is offered.

Textile materials. Albert Mellor, Ralph J. Mann, Donald Finlayson & Albert W. Morledge-Hadfield (to Camille Dreyfus). Can. P. 457 424, June 14, 1949.

Process for finishing light weight textile fabrics so as to increase the sheerness thereof, which comprises incorporating therein from 10 to 35% of their weight of a drying oil so as to coat the yarns thereof with the oil without closing the interstices of the fabric, and thereafter air-drying the oil on the fabrics.

Treating fabrics. Trubenized, Ltd. & E. Higgins. Brit. P. 587 162.

A process for plasticizing composite fabric consisting of threads or strands of both a thermoplastic organic derivative of cellulose such as cellulose acetate, and a non-thermoplastic material, such as cotton, by immersion in an aqueous emulsion of a plasticizer, the concentration of which determines the amount of plasticizer taken up by the non-thermoplastic material and the period of immersion governing also the amount taken up by the thermoplastic material. The emulsion is prepared, for example, by stirring a mixture of formanilide and formorthotoluidide into a solution of casein and hydrated borax in water at about 200°F and passing the mixture through a homogenizer. Di-ethylphthalate, tri-acetin and dibutyl phthalate are also suitable plasticizers, while glue, soap and alkyl naphthalene sulfonates may be used as emulsifying agents. The operative ply of the fabric is passed through the cooled solution until the required amount of plasticizer has been absorbed by the thermoplastic material, e.g., cellulose acetate.

Treating textiles with liquids. Am. Cyanamid Co. Brit. P. 587 572.

Textiles are finished by impregnating them with an aqueous solution of a quaternary nitrogen salt of a melamine formaldehyde condensation product and decomposing the salt by subjecting the textiles to heat at temperatures above 80°C and setting the resin on the textile fibers.

Treating textiles with liquids. Cluett, Peabody & Co., Inc. Brit. P. 586 637.

Textile material formed predominantly of regenerated cellulose is stabilized with respect to dimensional shrinkage and is rendered resistant to wrinkling, crushing and creasing without impairing its original softness, by treating it with an aqueous solution containing the equivalent of 15-120 cc of 30% by weight glyoxal solution and 0.125 to 4 g of an acidic catalyst and 12-50 g in all of one or more amino-aldehyde water-dispersible thermosetting resinous condensation products per liter of treating solution, and baking the treated textile material at 212-350°F for 40-2 minutes so as to effect a reaction between the glyoxal and the fibers of the material. A soft hand or feel may be imparted to the material by including in the treating bath a cation-active softener. The textile material may be in the form of fibers, yarns, fabrics or garments.

Treating textiles with liquids. E. I. duPont de Nemours & Co. & J. J. Verbanc. Brit. P. 585 859.

The adhesive obtained by treating an isoprene polymer dissolved in a solvent with an organic polyisocyanate and heating the resultant cement till the viscosity is reduced by not less than 20% is used to bond textiles such as cellulose esters and ethers and regenerated cellulose and wool and nylon to an elastomeric stock which may be natural rubber, guttapercha or balata or synthetic rubber. Examples are given of the treatment of regenerated cellulose with this adhesive in the manufacture of tires and of cotton duck in the preparation of plied belting. The isoprene polymer may be natural or synthetic rubber, balata or guttapercha.

Treating textiles with liquids, etc.; cellulose derivatives. Cluett, Peabody & Co., Inc. Brit. P. 585 679.

Textile material formed predominantly of regenerated cellulose is stabilized with respect to dimensional shrinkage and is rendered resistant to wrinkling, crushing and creasing without impairing its original softness, by treating it with an aqueous solution containing the equivalent of 15-120 cc of 30% by weight glyoxal solution and ⅛ to 4 g of an acidic catalyst per liter of the treating solution, and baking the treated textile material at a temperature of 212-350°F for 40-2 minutes so as to effect reaction between the glyoxal and the fibers of the textile material. The treatment may be applied to fibers, yarns, fabrics, or garments of regenerated cellulose including viscose, cuprammonium and saponified cellulose acetate varieties, or of mixed materials such as viscose-cellulose acetate, viscose-casein, viscose-soya

bean protein, viscose-wool and viscose-cotton.

Treatment of protein-containing textile materials and products thereof. Edw. L. Kropa & Arthur S. Nyquist (to Am. Cyanamid Co.). USP 2 499 653, Mar. 7, 1950.

A process of treating protein-containing textile material to reduce the felting and shrinking tendencies thereof which comprises (1) treating the textile material solely with a composition comprising a reactive product of polymerization of a polymerizable mixture including, by weight, from about 2 to 20% of maleic anhydride and from about 98 to 80% of a lower alkyl ester of acrylic acid that contains from one to 4 C atoms, inclusive, in the alkyl grouping thereof, and (2) heating the resulting treated material to cure the polymerization product.

Treatment of rayon fabrics. Chas. L. Mantell & Theodore J. Dabrowski (to United Merchants & Mfrs., Inc.). Can. P. 449 554, June 29, 1948.

Process of inhibiting the wash shrinkage of regenerated cellulose fabric which comprises treating the fabric with an aqueous solution made from about 10% by weight of urea, about 1 to about 2% by weight of stannic acid, and about 9 to about 13% by weight of alkali metal hydroxide for a time of treatment ranging from about 10 seconds to about 1 minute, thereafter stretching the fabric and drying it while in the stretched condition.

Treatment of textile materials. Albert Mellor, Ralph J. Mann, Donald Finlayson & Albert Wm. Morledge-Hadfield (to Camille Dreyfus). Can. P. 457 425, June 14, 1949.

Process for impregnating cellulose textile material with a hydrophobe film-forming material so that the material has a substantially uniform degree of transparency, which comprises subjecting the material while moist with water to the action of a hydrophobe organic liquid until the material has a substantially uniform appearance therein, and thereafter impregnating the material with a hydrophobe liqud capable of yielding a transparent film on drying, and causing the liquid to dry.

Treatment of wool and the like. Peter Alexander & Jas W. Bell (to Wolsey Ltd.). Can. P. 458 682, Aug. 2, 1949.

A process for the treatment of woolen material which comprises treating woolen material with a solution of methylol urea containing at least 25% of methylol urea, squeezing the treated material, drying the squeezed material, curing the dried material at a tempertaure of between 80°C and 135°C for between about one and 5 minutes, treating the cured material with a solution of strong mineral acid, squeezing the thus treated material, rinsing the squeezed material, drying the rinsed material and curing the dried material at a temperature of between 90°C and 135°C for between about one and 5 minutes.

Treatment of woolen pile fabrics. Jos. Caspé (to Am. Cyanamid Co.). USP 2 501 435, Mar. 21, 1950.

A method of treating pile fabrics having a pile of animal fibers which comprises applying to the pile only of the fabric an aqeous formaldehyde solution acidified to a pH of about 2-3 and then contacting the dampened pile momentarily with an iron heated to at least 350°F while maintaining the pile in a raised condition whereby the fibers of the pile are converted to a hair-like condition, shearing the pile, and applying thereto an aqueous solution of a curable thermosetting aminoplast resin and then heating the pile to cure the resin to a water-insoluble condition.

Upgrading spun rayons with special finishes. Adeline A. Dembeck. *Rayon & Syn. Tex. 31,* 108 (May 1950).

The popularity of spun rayon fabrics is attributed to the special finishes which have minimized or eliminated many of their shortcomings. The Unidure process of making spun rayon fabrics wrinkle resistant, and the Unisec process, which combines the features of the Unidure process with water-repellence, are noted briefly.

Web carrier and method of making same. Darwin Miscall (to The Orr Felt & Blanket Co.). USP 2 503 629, Apr. 11, 1950.

A process of making felts for paper-making machines and the like consisting of, weaving a fabric belt from warp and woof threads consisting of a wool fiber base, fulling the woven fabric belt to a stabilized shrinkproof state, impregnating the fulled fabric belt with an alkylated melamine formaldehyde resin solution to deposit in the belt 2½ to 15% of resin by weight based on the dry weight of the belt, and subjecting the impregnated fulled fabric to an elevated temperature to cure the resin in the belt, whereby the water drainage is maintained substantially constant throughout the life of the felt.

TESTING AND MEASUREMENT G

American Felt Co., K 3567 felt, flame resistant test. T. Kuhn. Glenn L. Martin Co., Baltimore,

Md. Engineering Laboratory. PB 98 465, Aug. 1944. 2 p. *Bibl of Technical Reports 13,* 255 (May 12, 1950). Microfilm $1.25, Enlargement Print $2.50.

Bulk torsional rigidity of jute and its relation to spinning quality. B. K. Chakrabarti. *Indian Textile J. 60,* 319-31 (Jan. 1950).

The assessment of spinning quality from the examination of the physical properties of jute fiber samples is described. The torsional rigidity is one of the physical characteristics studied in this paper because high rigidity interferes with smooth drafting, and produces yarns of lowered strength. The problem is approached from a theoretical standpoint and later theoretical conclusions are verified by laboratory tests. These experiments led to the conclusion that the ballistic work of rupture, fineness, and apparent density are useful criteria for the spinning quality of a fiber. It was also found that a sample with a high bulk torsional rigidity produces a yarn with low strength and high irregularity.

Colorimetric method for determining a surface-active agent. Guy R. Wallin. *Anal. Chem. 22,* 616-17 (Apr. 1950).

A method of analysis of a large variety of sulfated and sulfonated surface-active agents is described. Basic fuchsin is the reagent employed which forms colored complexes with these compounds. The colored complexes may be extracted and analyzed photometrically. The technique is simple and good precision and speed are claimed. WJH

Fiber and yarn breakage during determination of tensile strength and elongation. J. W. IJ. Heijnis. *Enka Breda Rev. 3,* 142-48 (Aug. 1949); *in Dutch.*

The author gives a description of the demands made upon clamping-in of individual fibers when determining the tensile strength and elongation at break and discusses a type of clamp fulfilling the requirements. The principles mentioned are applied to clamping-in yarn and rayon cord, and a clamp is described by means of which breakage of these materials near the clamps is eliminated almost completely.

Foreign-matter content in bales of cotton used for grade standards. Dorothy Nickerson. *Textile Research J. 20,* 277-78 (Apr. 1950).

As there was widespread belief the Government had increased the amount of trash in the 1946 standards for some or all of the grades, a study was made of the foreign-matter content of the bales used in preparing standards for the 1936 and 1946 International Cotton Grade Standards Conferences. The Shirley Analyzer was used for analyzing the samples. It was found that the agreement in percentage of trash content between the 1936 and 1946 standards bales for the same grades was extremely good.

Identification of modified viscose rayon. Jacques Michaud. *Can. Textile J. 67,* 72, 76 (Apr. 14, 1950).

A modified, or basified, viscose rayon is manufactured by impregnating the natural viscose rayon with a synthetic resin to confer upon the viscose an affinity for wool dyestuffs, permitting it to be dyed with wool in an acid bath. Because of its essential similarity to ordinary viscose rayon, identification of modified viscose rayon should be based upon its acquired chemical properties. The reactions of normal and modified viscose to the usual identification procedures are given in a table.

Impact investigation on textile materials. N. G. Battles. U. S. Air Materiel Command. Engineering Div. Materials Laboratory, Wright Field, Dayton, Ohio. PB 98 856, Dec. 1946. 13 p. photos. *Bibl. of Technical Reports 13,* 255 (May 12, 1950). Microfilm $1.75, Photostat $2.50.

Progress is reported on the investigation and development of basic data on the behavior of nylon under dynamic loading. The purpose of this work is the development of a suspension line having maximum energy absorption per unit mass. The results and future work on the dynamic evaluation of the construction and the dynamic evaluation of the processing involving effect of shrinkage, effect of twist balance, and effect of braiding tension are discussed.

A MODIFIED TECHNIQUE FOR MAKING COTTON FIBER MATURITY TESTS. Frances Carpenter & Roland L. Lee, Jr. Washington, U.S.D.A., Production and Marketing Adm., Cotton Branch, Apr. 1950. 17 p.

The modified technique described consists of preparing a specimen from 32 small pinches of fibers obtained from 32 places on the laboratory sample. The 32 pinches are all drawn into a sliver approximately 8 in. long from which a 2-in. section is pulled away. The fibers are placed on a 2 x 3 in. microscope slide, covered with a cover glass and flooded with an 18% solution of sodium hydroxide. A microprojector was used to make the readings.

The standard method for judging maturity was used. Good correlation was obtained between the modified and standard techniques. The modified technique, which was adopted as the standard procedure for maturity tests in the Research and Testing Division of the Cotton Branch, saves ⅔rds of the time required previously for a maturity test, gives results that compare favorably with those by the standard array method, and requires much less time for the training of technicians.

Significance of animal fibers in forensic science. I.—Some legal cases; II.—Miscroscopic examination. J. L. Stoves. *Fibres 11,* 59-60 (Feb. 1950); 105-08 (Mar. 1950).

The first part of this series gives instances of legal cases in which the identification of certain fibers had proved of importance. Part II is concerned with methods aiding in the identification of fibers. Methods mentioned include microscopic examination of longitudinal and transverse sections and cuticular scale patterns, and chemical tests using certain types of dyes and mordants.

Simple quantitative test for the felting of wool top. Herman Bogaty, Daniel Frishman, Arnold M. Sookne & Milton Harris. *Textile Research J. 20,* 270-76 (Apr. 1950).

A rapid and simple procedure for evaluating the feltability of wool in the form of top is described. The method consists of subjecting a sliver to controlled wet mechanical action and measuring its change in length. The results obtained correlate well with the shrinkage during laundering of garments made from top. In addition to showing promise of usefulness as a tool for investigating the nature of felting, the method also provides a useful tool for controlling the application of some chemical shrink-resistant treatments in the mill.

Spinning quality of cotton; new American staining test for thin-walled fibers I-III. Technologist. *Textile Mercury & Argus 122,* 593, 595-96, 605 (Apr. 14, 1950); 636, 638, 640 (Apr. 21, 1950); 681-82, 684 (Apr. 28, 1950).

This is a discussion of the main features of the differential dyeing test for thin-walled, or immature, cotton fibers, and its applications. The discussion is based on articles that have appeared in the literature within the recent past.

Studies of 24 denier, 12 filament nylon yarn vs. 210 denier, 34 filament nylon yarn. U. S. Air Materiel Command. Engineering Div., Materials Laboratory, Wright Field, Dayton, Ohio. PB 98 785, Oct. 1947. 8 p. tables. *Bibl. of Technical Reports 13,* 256 (May 12, 1950). Microfilm $1.25, Photostat $1.25.

Object of investigation was to study certain properties of 240-denier, 12-filament nylon yarn and to determine its possibilities for use in USAF textile materials. Shear strength, tenacity, abrasion, and elongation tests were made on the new material and also on the conventional 210-denier, 34-filament yarn. Comparisons were made between the 2. Title page is illegible. Author is illegible. This report will not reproduce well.

Swelling of jute bales. Edw. V. Gant. Connecticut Univ. Engineering Experiment Station, Storrs, Conn. PB 100 349, May 1946. 8 p. photos, graphs, table. *Bibl. of Technical Reports 13,* 256 (May 12, 1950). (Available from Univ. of Connecticut, Engineering Experiment Station, Storrs, Conn.)

Textiles and their testing. Gr. Brit. Ministry of Supply. PB 99 702, 1949. 90 p. photos, drawings, graphs, tables. *Bibl. of Technical Reports 13,* 140 (Mar. 17, 1950). $1.40. (Available from the Brit. Information Services, 30 Rockefeller Plaza, New York 20, N. Y.)

Clothing and fabrics G 1

Clothing as a factor in heat elimination during work in hot environments. H. S. Belding, E. S. Turrell, Sid Robinson & S. M. Horvath. Harvard Univ. Fatigue Lab. PB 99 289, n.d. 12 p. tables. *Bibl. of Technical Reports 13,* 105 (Mar. 17, 1950). Microfilm $1.75, Photostat $2.50.

Clothing for low temperatures; effects of cold on the bends; preselection of men for working in hot climates; effects of varying protein intake on men; vitamin loss in sweat. Wm. H. Forbes. U. S. Office of Scientific Research and Development. Committee on Medical Research. Monthly Progress Report No. 11. PB 99 028, Mar. 1943. 1 p. *Bibl. of Technical Reports 13,* 105 (Mar. 17, 1950). Microfilm $1.25, Photostat $1.25.

Cold and low pressure; diet; CO; clothing for low temperatures; water and salt requirements in high temperatures; and CO poisoning Wm. H. Forbes. U. S. Office of Scientific Research & Development. Committee on medical research. Monthly progress reports Nos. 6, 7, 8, 9, and 10. PB 99 249, Aug. 1942-Jan. 1943. 5 p. *Bibl. of Technical Reports 13,* 105 (Mar. 17,

1950). Microfilm $1.25, Photostat $1.25.

Comparative study of the serviceability of some linen and some plastic place mats. Bettie B. Dickson & Lilly H. Spencer. *J. Home Econ. 5*, 367-69 (May 1950).

It was found that a considerably longer period of use may be expected from linen mats than from plastic mats. At the end of the test period the linen mats showed a very high tensile strength; the decoration on plastic mats deteriorated. The total cleaning time for the plastic mats was slightly more than the total ironing time of the linen mats on a flatplate ironer.

Correlation of simulated rainfall tests with laboratory penetration tests. M. I. Landsberg, Roger Kelly & Dorothy Sinski. U. S. Office of the Quartermaster General. Military and Planning Division. Research & Development Branch. PB 99 531, Sept. 1949. 24 p. photo, graphs, tables. *Bibl. of Technical Reports 13*, 139 (Mra. 17, 1950). Microfilm $2.00, Photostat $3.75, Mimeo: 75¢.

A correlation has been established between the results of rain-room tests on garments and swatches and the results of the following laboratory tests: drop-penetration, duPont rain test, Bundesmann, and hydrostatic pressure. Experimental procedure, results and discussion, and conclusions are given. Tables and graphs are included. Bibliography attached.

Effect of tension on the porosity of a parachute fabric. W. D. Brown. Gt. Brit. Ministry of Supply. Aeronautical Research Council. PB 99 706, 1949. 10 p. photos, graphs, tables. *Bibl. of Technical Reports 13*, 139 (Mar. 17, 1950). 50¢ (Available from Brit. Information Services, 30 Rockefeller Plaza, New York 20, N.Y.).

Experiments were made with the fabric pulled along both warp and weft while its porosity was measured at pressures of 5 and 10 in. of water. A number of fabrics were tested covering various types of weave. Table, graphs and photographs are attached.

Fabric research: accelerated ageing of fabric. J. Maas. U. S. Naval Clothing Dept., Brooklyn, N. Y. PB 99 400, May 1949. 56 p. drawings, graphs, tables. *Bibl. of Technical Reports 13*, 140 (Mar. 17, 1950). Microfilm $2.75, Photostat $7.50.

The variable factors making up "weather" were separately analyzed as to their effect on the deterioration of cotton goods. Storage and exposure were considered separately. Some unexpected findings resulted.

Felt tests and specifications and their interpretation. R. R. Stevens. *ASTM Bull.* 48-9 (Feb. 1950).

The original quality requirements for felt were set up approximately 30 years ago and were simply an adaptation of test controls that were used for textiles in general. They have since been expanded. The various tests applicable to felt are noted briefly as follows: breaking strength, splitting resistance, ash test, matter soluble in carbon tetrachloride, matter soluble in water, wool content, tests for end use, tests for woven goods, special felt tests necessary, and use of fluorescent dyes.

Report on effect of sea water on silk and nylon parachute cloth. A. Mogul. U. S. Naval Air Material Center. Aeronautical Materials Laboratory, Philadelphia, Pa. PB 98 867, June 1944. 29 p. tables. *Bibl. of Technical Reports 13*, 255 (May 12, 1950). Microfilm $2.00, Photostat $3.75.

Samples of silk and nylon parachute fabrics were immersed in a bell-jar of sea water for periods of time ranging from 15 minutes to 8 weeks. After each period of immersion, 5 sets of 3 samples each were removed and one set tested for change in weight, tensile strength and tear resistance, one sample being left unrinsed, one being given a normal rinse, and the last being given a complete rinse. The remaining 4 sets were exposed to room conditions for 2, 4, 8 and 12 weeks, and given the same tests. Recommendations are made for handling of parachutes after immersion in sea water.

Instruments and instrumentation G 2

Detergency comparator. Clarence L. Nutting. *Am. Dyestuff Reptr. 39*, P260-61 (Apr. 17, 1950).

The Detergency Comparator, developed by the AATCC Research Committee on Evaluation of Detergents for Wool, is described. The device is essentially a pair of dolly washers scaled down to laboratory size and constructed of stainless steel. Temperature is thermostatically controlled by an electrically heated outer wash bath. Other features include: stepped pulleys for speed selection, 3″ diameter nip rolls, driven take-off rolls, and baffles to prevent cross contamination of detergent solutions under test. The Comparator is considered to be the only device that will satis-

factorily evaluate detergents under the conditions of high concentration and low bath ratio which exist in plant practice. Indications are that the Comparator may work equally well when used for cellulosic textiles.

Direct-reading photoelectric spectrophotometer. T. B. Davenport. *J. Soc. Dyers Colourists 66*, 191-99 (Mar. 1950).

A non-recording photoelectric spectrophotometer suitable for reflectance measurements over the spectral range 4000-6500 A is described. The instrument is compact and accurate, operates from AC, and is simple to use. Several diagrammatic sketches of sections of the instrument are presented. A circuit diagram is also given.

Electron microscopy: new technique for cutting very thin sections. Sanford B. Newman. *Textile Mfr. 76*, 165-66 (Apr. 1950).

See TTD: *7*, 325.

Fatigue studies of various cloths under repeated loadings. W. A. Corry. U. S. Air Material Command. Engineering Div., Materials Laboratory, Wright Field, Dayton, Ohio. PB 98 861, Jan. 1947. 12 p. graph, tables. *Bibl. of Technical Reports 13*, 255 (May 12, 1950). Microfilm $1.75, Photostat $2.50.

Fatigue studies of various cloths were made to determine the changes in per cent ultimate elongation and ultimate tensile strength, and the tendency of various cloths to take "permanent set" after repeated loadings.

Measurement and theory of absorbency of cotton fabrics. Edmund M. Buras, Jr., Chas. F. Goldthwait & Rita M. Kraemer. *Textile Research J. 20*, 239-48 (Apr. 1950).

A simple and rapid test which evaluated numerically the 2 absorbency factors—rate and ultimate absorption—is described. The apparatus, which is easily assembled and calibrated, used a glass filtering funnel to provide a wet porous plate and a flow meter for measuring rates. Absorbency tests with purified cotton fabrics led to a plausible explanation of their absorption behavior as being due largely to spaces within the fabric rather than to absorption characteristics of the fiber itself.

Measurement of physical states of materials. Ferranti Ltd. & Tootal Broadhurst Lee Co. Ltd. Australian P. 136 033, Nov. 6, 1945.

To determine the moisture content of a moving web of material by a measurement of dielectric losses when passed between the plates of a condenser, a tunable oscillator circuit utilizing a triode provides an input to a tuned amplifier circuit on a pentode which has a condenser between the plates of which the web of material passes. The condenser is provided with automatic rotation thereby varying the tuning cyclically and repeatedly through a frequency band which includes the resonant frequencies resulting from all likely changes in the state of the material. The relative values due to dielectric losses are indicated on a milliammeter.

Thread pulling tool. Edna M. Franklin. USP 2 504 676, Apr. 18, 1950.

A thread drawing tool including: 2 elongated body members pivotally connected together intermediate their ends; 2 elongated blade portions carried respectively by the members and having adjacent flat complemental faces slidably engaged in overlapping relation with each other; and a sharp point of the end of one of the blades, the point projecting beyond the end of the other blade and being curved upwardly.

Viviani apparatus. V. E. Gonsalves. *Enka Breda Rev. 3*, 17-18 (Feb. 1949); *in Dutch.*

Denier variations in a rayon thread can be measured and recorded with the aid of the Viviani apparatus. The operation of this apparatus is described.

TEXTILE MILLS H

Disposal of waste fluorescent tubes. Anon. *Textile J. Australia 24*, 996, 999-1000 (Jan. 1950).

Detailed instructions for the disposal of burned-out fluorescent tubes are given. These tubes which contain beryllium compounds form a serious health hazard if the tubes are broken in such a manner that the beryllium compounds are inhaled.

Good vision is necessary for efficient production. Jesse G. Shadow. *Textile World 100*, 143, 145, 228, 230 (Apr. 1950).

Riegel has a program consisting of: 1) testing all new employees and re-checking all employees every 2 years with the A O Sight-Screener; 2) the services of a vision specialist on a consultant basis; 3) a follow-up to see that those who need visual care can get it. This program has resulted in increased efficiency in production and quality. It has also helped the safety program. The programs and its effects are described. About 20% of the employees were found to need visual treatment of some kind.

Revised layout provides for future expansion. H. Warren Roos. *Textile World 100,* 103, 106, 234, 236 (Apr. 1950).

Mills planned and located without thought of how future expansion would take place have resulted in complex arrangement as additions have been made to the original plant through the years. If additional expansion is now needed, the mill should make a complete analysis, including future needs, so that whatever is done will be integrated with those needs. Flow charts, process charts, and Gantt charts will aid materially in doing this. A case history is given that shows what can be done.

Stainless steel needs proper maintenance. Grant L. Snair, Jr. *Textile World 100,* 128-29, 210, 212, 214 (Apr. 1950).

Stainless steel, being resistant to corrosion, may be cleaned with cleansers unsuitable for other steel products. Surface contamination only usually has to be removed. The presence of foreign matter interrupting the continuity of the surface encourages corrosion, and therefore should be cleaned off. Laps, joints, corners and other offsets should be watched for deposits, and cleaned regularly. Gaskets or packings are also spots that need watching. A table of good maintenance rules, another of cleansers and how to apply them, and another of points to keep in mind are included with the article.

CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

Catalytic degradation and oxidation of cellulose. W. George Parks, John G. Erhardt, Jr. & Donald R. Roberts. *Am. Dyestuff Reptr. 39,* P294-300 (May 1, 1950).

The catalytic decomposition of cellulosic material and the effect of various possible flame-retardant reagents on the reactions involved were investigated. The rate and mechanism of the oxidation of cellulose were studied on the basis of the products of the reaction in the presence of various catalytic substances. The volume of carbon dioxide, carbon monoxide, and the quantity and composition of the tarry products formed were determined. In experiments completed to determine the influence of various chemical compounds in the oxidation of char, no group of compounds exhibited satisfactory glow-proofing properties. The effect of various catalysts was tested on the formation of tars. The carbonate and chloride of lithium decreased the tar formation, and sodium carbonate and chloride, and potassium chloride were also effective. Afterglow was observed with all catalysts except the borates, phosphates, cerrium sulfate and chromic, antimony and zinc chlorides. Phosphate salts were, in general, most effective in reducing the amount of tar and carbon dioxide in the thermal decomposition of cellulose. They also have a marked effect on flammability.

Impact of raindrops on fabrics. Marianne Kärrholm & Gunnar Kärrholm. *Textile Research J. 20,* 215-26 (Apr. 1950).

Pressure-time relationships existing during the impact of water drops on fabric surfaces was studied; high-speed motion pictures were used to record the impact. Calculations are presented for the pressure exerted by the waterdrops, depth of penetration, and the manner in which the waterdrop deforms during impact. Important principles that could be used for the design of water-repellent fabrics are given by the theory described. Pores of plain-surfaced fabrics must be small so that high pressure will be required to force water through them. As an alternative the fabric surface can be made highly compressible, for example, raised fabrics, in which case the pressure exerted by the raindrops will be much smaller. Requirements for the testing of water-repellent fabrics are examined in light of the theories and experimental results reported.

Law of critical yarn diameter and twist: influence on yarn characteristics. Alberto Barella. *Textile Research J. 20,* 249-58 (Apr. 1950).

The effect of increased twist upon yarn density was explored; a law of critical diameter is postulated. It is suggested that when a yarn breaks under tensile load the yarn density equals the fiber density. The influence of twist on contraction is examined and prediction formulas for cotton, woolen, worsted, and rayon yarns are given.

Microbiological degradation of cellulose. Glenn A. Greathouse. *Textile Research J. 20,* 227-38 (Apr. 1950).

Even though considerable information has been accumulated, the exact mechanism of microbiological attack on cellulose is not known. Cellulose derivatives substituted at various positions in the molecule were evaluated for resistance to attack by *Myrothecium verrucaria.* The following were found to be completely resistant to attack: cellulose acetate, containing 9.3% or more acetyl; cellulose triacetate; ethylcellulose, 45.8% ethoxy; methylcellulose, degree of substitution

2.0; and 6-cyano-ethylcellulose containing 1.7 CN groups per anhydroglucose unit. Slightly resistant were: cellulose acetate with 3.4% and 5.1% acetyl; cellulose-6-nitrate, and 6-carboxycellulose were only slightly resistant. Cellobiose octacetate and pentacetyl glucose were completely resistant to the attack of *M. verrucaria.* These data suggest that the resistance of the cellulose molecule to attack by this fungus can be attributed to a chemical blocking of one or more of the alcoholic groups. Preliminary data on the isolation and properties of a cell-free enzyme preparation from *M. verrucaria* are presented. The following are given in an appendix: 1) Method of determining alkali solubility, fluidity, and copper number; 2) Preparation of cellulose triacetate of varying degrees of polymerization); 3) Preparation of a poly-homologous series of hydrocelluloses; 4) Preparations of extracts from *Myrothecium verrucaria* containing active cellulases; 5) Method of determining an index of the cellulolytic activity of *Myrothecium verrucaria* extracts; and 6) Identification of reducing sugars.

Recrystallization of regenerated cellulose upon mercerization. P. H. Hermans, D. Vermaas & A. Weidinger. *Nature 165,* 238 (Feb. 11, 1950).

It has been shown (see Hermans, P. H. & Weidinger, A., TTD: *6,* 815) by application of a quantitative x-ray method that viscose rayon fibers, upon boiling with 2.5 *N* sulfuric acid, exhibit a distinct increase in crystallinty from 40% initially to nearly 50%, which is terminated within half an hour. It has now been found that a similar recrystallization can be effected by "mercerization." Four different rayon fibers treated in 18% caustic soda solution at room temperature for 10 min., then washed and dried showed, upon x-ray examination, yields of percentage crystallinity varying between 50 and 55%—a somewhat larger increase than that obtained by acid hydrolysis.

X-ray irradiation of cellulose acetate. N. N. Winogradoff. *Nature 165,* 72 (Jan. 14, 1950).

Describes experiments in which samples of cellulose acetate yarn and fiber were exposed to x-ray irradiation. Results obtained seem to indicate that chemical and structural changes may take place in certain substances during long exposures required for x-ray diffraction patterns, and may influence the interpretation of the diagrams.

TEXTILE EDUCATION AND RESEARCH J

High-speed motion pictures in textile research. Earl K. Fischer & Jack C. Burnett. *Textile Research J. 20,* 259-69 (Apr. 1950).

This article is a summary of some recent experiments in the application of the high-speed motion picture camera to the study of textile problems. The initial objective was to determine the capability of the instrument, and for this purpose a variety of subjects was chosen, including the following: 1) card, drawing and spinning frame, and loom operation; 2) yarn and cord breaks; and 3) wetting phenomena. Use of the high-speed motion picture camera permits the photographing of machinery operating at high speeds or other phenomena occurring too rapidly to permit clear visual observation; when the pictures thus made are projected, the speed of the action is so slowed down that its details may be studied at leisure. Also included in this article are a description of the types of cameras used, special details on technique, a comparison with other methods for viewing action, and illustrations of some of the applications.

PHYSIOLOGY OF HEAT REGULATION AND THE SCIENCE OF CLOTHING. Prepared at the Request of the Division of Medical Sciences, Natl. Research Council. Ed. by L. H. Newburgh. Philadelphia & London, W. B. Saunders Co., 1949. 457 p., 78 figs., 38 tables. Price: $7.50.

The 2 chief factors in man's adaptation to extreme climatic conditions are the human body and the clothing with which man seeks to protect himself. World War II presented new and unique problems in climatic adaptation; the present work is a result of studies made by American and Canadian workers in seeking solutions to climatic problems. In Part I, this book attempts to describe the responses of the human heat regulatory mechanism to the whole range of climatic conditions encountered on the earth's surface, and emphasizes the maximal capacity of the mechanism to preserve life under the most adverse conditions. Part II, which is of special interest to the textile industry, consists of the following papers: "Physical properties of clothing fabrics," by Lyman Fourt & Milton Harris; "Laboratory and field studies; general principles," by W. H. Forbes; "Desert," by E. F. Adolph; "Tropics," by Sid Robinson; "Protection against dry cold," by C. R. Spealman; "Water," by C. R. Spealman; "Special problem of hands," by Marvin A. van Dilla, Richard Day & Paul A. Siple; and "Clothing and Climate," by Paul A. Siple. An appendix gives definitions, miscellaneous figures and conversion factors.